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SUBJECT INDEX TO THIS ISSUE

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LEUKOPLAKIA BUCCALIS

OBSERVATIONS BASED ON A STUDY OF FORTY CASES *

HOWARD FOX, M.D.

NEW YORK

While much has been written on leukoplakia buccalis, there is still some difference of opinion regarding certain of its features. The subject was discussed before this section in 1922 by Hazen and Eichenlaub,[1] and since then has been reviewed by Maderna [2] in Italy and by DeForest [3] in this country. My object in again introducing the subject is to give the results of personal experience, especially in their relation to its etiology. The relationship of syphilis as a precursor of the disease and of cancer as a possible complication are perhaps the most important points to consider. Although leukoplakia affects other mucous membranes besides those of the oral cavity, the latter alone will be considered in this communication.

SYMPTOMS

Leukoplakia varies greatly in appearance according to its age and development. In the early stages, the process is superficial and, as a rule, the patient is not aware of its presence. It may appear in the form of minute points, streaks or more often smooth patches of irregular size and shape. It is generally bluish white or slaty, or may suggest the appearance of mucous membrane touched with silver nitrate. Eventually the patches become noticeably thickened, whitish, rough and stiff. The surface may be exfoliated, fissured or ulcerated and the borders more or less inflamed. Bleeding may occur on slight trauma. Subjective symptoms are now in evidence, and interference with speech and eating may occur.

The favorite sites for leukoplakia, according to Maderna, are the dorsum of the tongue and mucous surface of the lips and gums, and only in exceptional cases the hard or soft palate or under surface of the tongue. My experience coincides largely with these statements. In my series of forty cases, the disease affected the tongue in twenty-eight cases, the commisures in twenty-six, and the cheeks in twenty-one cases. Frequently the patches were present on two or three of these regions. In nine cases, the lips (including the mucous surface and vermilion border) were affected, and in two cases the soft palate. When the tongue was involved, the favorite site was the anterior half of the dorsum or sides. The disease was noted eight times as often on the anterior as on the posterior portion. In a single case, it affected the under surface of the tip of the tongue, while in none of my patients were the gums involved. When seen on the buccal mucosa, the disease was generally bilateral. In eight cases in which it was unilateral in all except one, the right side was affected.

A complete absence of subjective symptoms was noted in eighteen of my cases. While present in twenty-one cases, they were generally of a mild type and occasioned by the ingestion of very hot or highly seasoned food or by the use of tobacco. In two cases, the subjective symptoms disappeared after treatment by arsphenamin, although the lesions themselves were unaffected.

ETIOLOGY

Age.—Leukoplakia is essentially a disease of adults. When first seen by the physician, the patient has frequently reached middle age. This was certainly true in my cases, in which the average age at the time of the first visit was 48.4 years. The average duration of the disease, as far as the patients were aware, was 8.7 years.

Sex.—Leukoplakia, while not exclusively a disease of men, shows a striking predilection for the male sex. Cumston [4] states that out of a total of 848 cases collected from the literature, including ten of his own, "there were only thirty females." In my own series, there were thirty-eight men and two women.

Race.—The full blooded negro, I am convinced, rarely suffers from leukoplakia. For the last twelve years, I have had unusual opportunities at the Harlem Hospital to study skin diseases in the negro. In spite of constant watchfulness, I have seen only four undoubted cases of leukoplakia in this race, only two of these patients being full blooded. One of these was observed at Camp Upton in the course of an examination of negro troops. In my statistical study of skin diseases in the negro,[5] a photograph of leukoplakia is included which was taken many years ago by my father, Dr. George Henry Fox. I had never seen the patient myself. In Hazen's [6] study of skin diseases in the American negro, leukoplakia was observed in five white persons and in two negroes.

Occupation.—It would not appear that occupation plays any part in the causation of leukoplakia, with the

* Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the author's reprints.

* Read before the Section on Dermatology and Syphilology at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

1. Hazen, H. H., and Eichenlaub, F. J.: Leukoplakia Buccalis, J. A. M. A. **79**: 1487 (Oct. 28) 1922.
2. Maderna, C.: Leukoplasia Orale, Naples, Detken and Rocholl, 1923.
3. DeForest, H. P.: Leukoplakia Buccalis, Ann. Surg. **78**: 474 (Oct.) 1923.
4. Cumston, C. G.: Note on the Pathology and Surgical Treatment of Leukokeratosis Linguae, Ann. Surg. **78**: 469 (Oct.) 1923.
5. Fox, Howard: Observations on Skin Diseases in the Negro, J. Cutan. Dis. **26**: 67 (Feb.) 1908.
6. Hazen, H. H.: Personal Observations upon Skin Diseases in the American Negro, J. Cutan. Dis. **32**: 705 (Oct.) 1914.

rare exception of workers such as glass blowers or those habitually exposed to dust and smoke, in whom a direct source of local irritation is evident. In my own cases, twenty-three different occupations were represented, including professional and business men leading a sedentary life, and artisans and others doing manual labor or living outdoors.

Syphilis.—The question of the relationship of syphilis to leukoplakia has been the cause of much difference of opinion. The contention is that syphilis acts in some unknown manner as a predisposing cause to the formation of leukoplakia. That the latter disease is not a direct syphilitic manifestation is evident from its histologic structure and its failure to be influenced by antisyphilitic treatment. The essential pathologic process is a hyperkeratinization of the mucosa and a gradual sclerosis of the derma, changes that are not characteristic of syphilis.

There is a mass of evidence in the literature showing that leukoplakia is preceded in a large proportion of cases by a syphilitic infection. The statistics of Fournier[7] show that of 324 patients suffering from leukoplakia, 80 per cent. had previously been infected with syphilis, and in the remaining 20 per cent. this disease could not be absolutely excluded. Max Joseph,[8] on the other hand, found a much smaller percentage (35.2 per cent.) in 100 cases of leukoplakia. Opinions of American textbook writers on dermatology differ concerning the etiologic relationship of syphilis to leukoplakia. Thus, Highman states that "leukoplakia buccalis is almost invariably syphilitic," and Sutton considers that "syphilis is an important factor in many instances." Ormsby says, "It is believed that syphilis may be one of the indirect causes," while Pusey and Stelwagon think the relationship of the two conditions is questionable. Hazen and Eichenlaub consider that "syphilis represents an accidental rather than a causative factor in this disease."

In 65 per cent. of my cases, a previous syphilitic infection was judged to have occurred from the history, Wassermann reaction or presence of tertiary manifestations. While my percentage is not as high as that of some other observers, it is too high to ignore the relationship of the two diseases. It is quite possible that my figures show a smaller proportion of syphilitic infections than was actually present. For instance, in six of the cases giving no history of syphilis, the Wassermann test had unfortunately not been performed. Furthermore, in many cases of syphilis of long duration, the blood Wassermann test is found to be negative. In nineteen of my cases with negative Wassermann tests, the average duration of syphilis had been twenty-two years.

Tending to show that the syphilitic infection had antedated the leukoplakia, eighteen of the known syphilitic patients stated that their leukoplakia had been present on an average about half as long as their syphilis. This, it must be admitted, is not entirely conclusive, as the leukoplakia may have been present, unknown to the patient, for a considerable time.

Whatever effect syphilis may have had in my cases in predisposing to leukoplakia, its action was largely unhampered by treatment. In twenty-six of the syphilitic patients, the treatment administered previous to the appearance of the leukoplakia had been very inefficient. In six cases, there had been no treatment whatever; in sixteen, the treatment had been inefficient and fairly energetic in only four cases.

Desiring to learn the incidence of leukoplakia in a large number of known syphilitic patients, I recently visited the syphilitic clinic of Dr. M. B. Parounagian at Bellevue Hospital. Here the opportunity was offered of carefully examining the buccal cavities of 280 patients in a single afternoon. To my surprise, nine of them showed evidences of leukoplakia, mostly of a mild degree in the commisural region. While even this proportion may seem large, it is astonishing to hear the results of examination of fifty cases of neurosyphilis by Elliott and Stookey.[9] They report that in these cases the "changes in the buccal and lingual mucosa have been as constant a finding as any abnormality of the pupils," and further state that "only one case showed a normal mucosa of the entire buccal cavity."

While there is much evidence to show the frequent relationship between syphilis and leukoplakia, there is excellent proof that many cases of the latter occur without any such association. From a careful study of this subject, Raillet[10] concluded that in at least 15 per cent. neither acquired nor congenital syphilis could be held responsible. Cases are also on record in which persons with long standing leukoplakia have contracted syphilis.

Tobacco.—The synonym "smokers' patches" is frequently used for leukoplakia buccalis and suggests a predisposing cause that is without doubt of the greatest importance. There is such a general agreement on this score that it would be useless to quote much of the literature. Joseph goes so far as to say that he had never seen a patient whom he had learned to know, who at some time had not been a smoker. He also considers that the "severity of leukoplakia depends upon the greater or less use of tobacco."

All of the patients in my series, with the exception of the two women, had been more or less addicted to the use of tobacco. Thirty-five were habitual smokers, twenty-five of these using tobacco to excess, some of them since boyhood. Two of the patients smoked moderately and one occasionally. In addition, four of them chewed tobacco. Cigars, cigarets and pipes were used about equally.

A significant relationship between leukoplakia and the use of tobacco is that the affection is chiefly seen in men, who in general consume much more tobacco than women. The irritating effects of smoking, it may be mentioned, are due not only to the nicotin but to various products of combustion, such as carbonic acid gas, ammonia and creosote.

Alcohol.—The immoderate use of alcohol may be one of the predisposing causes of leukoplakia, especially when it gives rise to marked gastro-intestinal disturbances. In my series of patients, eight used alcohol to excess; nineteen drank moderately and seven occasionally, while five were total abstainers.

Food.—Highly seasoned or very hot food is another source of irritation, which has been thought to play a part in causing leukoplakia. There can be no doubt about the discomfort which this produces in some of the more advanced cases. In answer to the question regarding the use of highly seasoned food, eight of my patients admitted such a predilection.

Teeth.—The irritating effects of decayed teeth, with jagged edges, etc., are emphasized by Hazen and

7. Fournier, A.: Des relations de la leucoplasie buccale avec la syphilis et le cancer, Tr. 13 Internat. Cong. Med. **9**: 496, 1900.
8. Joseph, Max: Leucoplakia of the Mouth and Its Treatment, Am. J. Dermat. **12**: 495 (Dec.) 1908.
9. Elliott, B. L., and Stookey, P. F.: The Buccal and Lingual Mucosa in Neurosyphilis, M. J. & Rec. (Supp.) **119**: 138 (June 4) 1924.
10. Raillet, G.: La part de la syphilis dans l'étiologie de la leucoplasie buccale, Bull. et mém. Soc. méd. d. hôp. de Paris **43**: 325 (April) 1919.

Eichenlaub as an important cause of leukoplakia. Bloodgood,[11] in a series of twenty-seven cases, found "dirty, rough" teeth in all but one. According to James,[12] leukoplakia may be due to "dental infection" alone, the writer stating that in some of his cases "no other cause could be found." In thirty-eight of my cases, notes concerning the condition of the teeth were made. In eighteen cases, it was recorded as good or fair and in a similar number as poor or bad. In two cases, all of the teeth had been extracted.

Gastro-Intestinal Disturbances.—Disturbances of the gastro-intestinal tract are considered by many to have an influence in the causation of leukoplakia. Of my patients there were twenty-two who suffered from more or less indigestion, chronic constipation, badly coated tongue, etc.

COMMENT ON ETIOLOGY

Leukoplakia is not itself a syphilitic process. Syphilis, however, precedes the appearance of leukoplakia sufficiently often to conclude that it may be one of the factors in its production. I cannot agree with Hazen and Eichenlaub, who consider syphilis to be "an accidental rather than a causative factor" in this disease. It is undoubtedly true that, in a minority of the cases at least, leukoplakia may occur independently of syphilis. The real cause of leukoplakia, as Maderna states, is still unknown. Whether syphilis may or may not have preceded the appearance of leukoplakia, some local source of irritation can generally be discovered. Such irritants include smoking, chewing of tobacco, the excessive use of alcohol, gastro-intestinal disturbances, the presence of decayed or jagged teeth, and indulgence in very hot or highly spiced food. By far the most important local irritant, in my opinion, is tobacco. This opinion is shared by many other observers and is certainly corroborated by my own experience. Rough and jagged teeth may play a part in causing leukoplakia through mechanical irritation. I feel, however, that too great emphasis has been placed on this form of irritant by Hazen and Eichenlaub, who consider that rough teeth "inaugurate the disease in the vast majority of cases." In the opinion of DeForest, "tobacco and syphilis must be regarded as the most important factors in etiology." He considers that "where syphilis exists, it is probably true that less smoking is necessary to develop leukoplakia." I feel convinced that in the majority of cases one of these two factors is concerned in the causation of leukoplakia buccalis.

RELATIONSHIP TO CANCER

The most important feature of leukoplakia from the practical standpoint is its well known tendency to develop malignancy. This does not mean that the majority of cases will terminate in cancer, especially when the sources of irritation are removed. Many cases of leukoplakia persist for years or even decades without even causing any appreciable discomfort to their possessors. The disease is, however, a continual menace and, if sufficiently irritated, has a potential power for harm. It is eminently proper to class it among the "precancerous" affections. Mantilla[13] has tabulated 566 cases from the literature, reported by some eleven observers, and has found that in 32 per cent. cancer eventually developed. Bloodgood considers that leukoplakia is second only to bad teeth as a cause of cancer of the mouth. In 160 cases of cancer of the tongue in men, Bloodgood found that in forty-one cases leukoplakia had been present and known to the patients for years before the appearance of the cancer. In four of my cases of leukoplakia, undoubted clinical carcinoma was noted. In one, the diagnosis of carcinoma was recorded as probable and in three others as possible.

TREATMENT

It has been stated that leukoplakia occasionally disappears spontaneously, though it has never been my fortune to observe such a favorable outcome. The disease is notoriously rebellious to treatment, as shown by numerous remedies that have been recommended, many of which are hopelessly inefficient. Antisyphilitic treatment in the vast majority of cases will not cause the disappearance of leukoplakia, though it may benefit the subjective symptoms. It is quite possible that the condition may even be aggravated by such drugs as mercury, bismuth and the iodids, through their tendency to produce stomatitis.

Prophylaxis is all important and consists in removing, as far as possible, all causes of local irritation. It would certainly be best to prohibit entirely the use of tobacco. At least, its consumption should be reduced to the lowest possible amount. When the habit of smoking cannot entirely be given up, cigar and cigaret holders or long stemmed pipes should be used. The teeth should be put in order, especial attention being given to the removal of rough edges, badly fitting plates, etc. Alcohol should be used in moderation or prohibited, and a warning sounded against the ingestion of very hot or highly spiced foods. Gastro-intestinal disturbances should receive proper attention. In addition, the frequent use of a bland mouth wash is advisable. The elimination of sources of irritation will not cure the leukoplakia, it is true, but the subjective symptoms will be benefited or completely relieved and the chances of future malignancy will be vastly lessened.

For years, I have taken a decidedly conservative stand regarding the active treatment of leukoplakia. Where prophylactic measures are faithfully carried out and the patient kept under observation, the milder types of leukoplakia require no active intervention. As a matter of fact, few of these patients apply for treatment in the earlier stages, as they are generally unaware of the presence of leukoplakia. Again, in the very extensive cases involving considerable area of the tongue and buccal mucosa, radical treatment is out of the question. I have been pleased to learn the opinion of Bloodgood regarding active treatment in this disease. He states that "as long as the leukoplakia shows no tendency to crack or peel off or form an ulcer there is no indication for any treatment other than the removal of the causes —tobacco, teeth and syphilis." He adds, however, "the moment a patch of leukoplakia splits, scales or desquamates and leaves an ulcer, the area should be excised with the cautery."

Of the many methods recommended for the active treatment of leukoplakia, chemical caustics are among the least satisfactory. The frequent practice of using such a superficial caustic as silver nitrate cannot possibly accomplish any good and is liable to do harm. Among the various physical agents which have been recommended may be mentioned electrolysis, carbon dioxid snow, superheated air, endothermy, the actual cautery, the roentgen ray and radium. The roentgen ray has not proved satisfactory, partly because of the natural difficulty in applying it to the buccal cavity.

11. Bloodgood, J. C.: Cancer of the Tongue: A Preventable Diease, J. A. M. A. **77**: 1381 (Oct. 29) 1921.
12. James, W. W.: Some Clinical Cases Associated with Dental Infection, Proc. Roy. Soc. Med. (Sect. Odont.) **14**: 47 (Aug.) 1921.
13. Mantilla, P. L.: Leucoplasies et cancer, Thèse de Paris, 1900-1901.

The two most widely used agents at present are probably radium and the electric cautery. MacKee [14] states that he has "been disappointed with both x-ray and radium in the treatment of this affection." He adds that "small patches can be cured with radium, but they can be cured with greater certainty (although with more discomfort) by means of the galvanocautery." Maderna is one of the warm advocates of radium, the favorable action of which he thinks is heightened by preliminary treatment with arsphenamin. He makes the rather surprising statement regarding radium that "with a few treatments and weak doses," he has cured all his patients. With both radium and the electric cautery, I have had disappointing results in some cases, recurrences taking place after the patches had supposedly been destroyed. In five of my series of cases, radium had previously been used, in three cases by men of experience. In none of them had the result been permanent. Levy [15] concludes that "the results of treatment are unsatisfactory."

CONCLUSIONS

1. Leukoplakia occurs chiefly in men, especially of middle age. It is rare in women and in full blooded negroes.
2. The essential cause of leukoplakia is unknown.
3. Syphilis acts as a predisposing cause in the majority of cases. In a minority of cases, such a relationship can be definitely excluded.
4. Various sources of local irritation act as predisposing causes, including tobacco, alcohol, rough teeth and gastro-intestinal disturbances. Of these, tobacco is undoubtedly the most important.
5. Leukoplakia is a frequent forerunner of cancer, though it may exist for years or decades before the appearance of any malignant change.
6. In the treatment of leukoplakia, prophylaxis is all important.
7. The permanent cure of leukoplakia is difficult, the best agent for this purpose being apparently radium or the actual cautery.

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ABSTRACT OF DISCUSSION

DR. OTTO H. FOERSTER, Milwaukee: In the relationship of syphilis to leukoplakia, recurring mouth lesions of syphilis must be recognized as of considerable importance. In resistant or insufficiently treated cases of syphilis, they may account for some of the cases of later leukoplakia. Furthermore, hot foods, particularly hot fluids, taken into the mouth injure the mucous membrane and this is a factor in the production of leukoplakia, either the sole factor in some cases or the additional factor of injury acting on structures previously altered by syphilis. My experience in connection with carcinoma of the tongue and leukoplakia has been that carcinoma has occurred only when the leukoplakia was extensive, when it was associated with deforming interstitial syphilitic glossitis, and when there was a definite history of injury. In some of the cases verrucous leukoplakic patches had been present which, by rasplike rubbing against opposing surfaces, had caused injury of the base. Darier described chronic small angular ulcerations occurring in leukoplakic patches, which apparently do not have the potentiality for malignant change found in the fissures of leukoplakia. The floor of these ulcers is smooth and red, is raised to the level of the leukoplakic patch, and is separated from it by a deep folded-in furrow. I agree with Dr. Fox that antisyphilitic treatment for leukoplakia is useless. In the presence of leukoplakia in an evidently syphilitic patient, antisyphilitic treatment should be given or withheld only after consideration of the therapeutic requirements of the patient in general and not of the tongue or mouth alone. Electrothermic coagulation, endothermy, appears to offer a method of treatment which in my limited experience has been satisfactory. I wish to express a word of caution to the effect that any local treatment in leukoplakia, unless it be by a powerful and thoroughly destructive agent, is meddlesome and dangerous and should not be employed.

DR. J. FRANK SCHAMBERG, Philadelphia: I can fully endorse every statement made by Dr. Fox. We ought, however, to differentiate between the terms leukoplakia, which represents smooth, whitish patches, and leukokeratosis. The former has often a preceding change and remains relatively harmless. It is when deeper changes occur in the mucous membrane that the condition becomes dangerous in respect to ensuing cancer. Syphilis is the largest factor in the leukodermias in the mouth. I think we may conceive that the spirochete is lodged in the tongue, as in the skin, and there remains and by reason of being there plays a rôle as the dominant irritant. In the way of irritants, I think smoking plays the greatest part. Hot food may be a factor, but when we see the tremendous number of cases in men over those seen in women we must conclude that tobacco plays a large rôle. We have all seen many cases that clear up when smoking is stopped and recur when it is resumed. We must remember that other conditions in the mouth may be confused with leukoplakia, such as lichen planus and also certain chronic inflammations which may lead to whitish patches, with some thickening of the outer layer.

In regard to treatment, I agree that antisyphilitic treatment has little effect. I have seen some little improvement under syphilitic medication, but have never seen a complete disappearance of the patches without prohibition of smoking. It is most important to prohibit smoking completely because of the danger of cancer. Every case of leukokeratosis of the mouth may be regarded as a precarcinomatous condition. I am inclined to believe that in many cases the carcinoma runs a more benign course than when it is of other origin. I know of one case in which the growth was destroyed by electrodesiccation and the man is well at the end of five years. I agree with Dr. Fox that the roentgen ray and radium should not be employed in the treatment of leukoplakia. They lower the resistant power of the tongue because of the vascular changes. Electrodesiccation is a proper treatment if well carried out, and, in some instances, one may with the electrocautery knife decorticate the tongue. I have had excellent results in one or two cases from this procedure. We should impress on the public the necessity of seeking medical care when these white spots appear on the tongue. As has been stated, they frequently are not observed by the patient. The dentist may see them and refer the patient to a physician, and then a positive Wassermann reaction will be found. The condition may escape recognition for a long time and, if the tongue becomes thickened, it becomes a menace to the patient.

DR. HENRY H. HAZEN, Washington, D. C.: I cannot agree with the statement that leukoplakia is very frequently of syphilitic origin, and yet in making this statement we must take care to define very carefully what we mean by leukoplakia. I agree with Dr. Fox that the great majority of cases involving most of the dorsum of the tongue are syphilitic, probably over 50 per cent. of the cases, if that constitutes leukoplakia alone. But, on the other hand, if we make a routine examination of the mouth, we shall find that many of the patients of advanced years have a certain degree of leukoplakia on the buccal membranes; if not a definite leukoplakia, a leukokeratosis. I can see no difference between these except one of degree. If one will study these lesions still more closely, one will find that in every case they coincide with the tooth lines, where the buccal mucosa rubs on the teeth. I think this is a most striking thing. If we make a Wassermann test and study these patients for syphilis we shall find that practically none of this group will show syphilis, although a large percentage of those cases showing extensive leukoplakia on the dorsum of the tongue do show syphilis. Another factor that may be partly responsible for the difference is that the series of cases which Dr. Eichenlaub and I published some three years ago were private cases.

14. MacKee, G. M.: X-Rays and Radium in the Treatment of Diseases of the Skin, Philadelphia, Lea & Febiger, 1921, p. 480.
15. Levy, Robert: Leucoplakia Buccalis et Lingualis, Laryngoscope 25:539 (Aug.) 1915.

Another factor of considerable etiologic importance is the possibility of either Vincent's infection or a streptococcus infection in the gum. I have seen a number of cases within the last year in which there was a very definite leukoplakia surrounding Vincent's infection on the gum, and as soon as the teeth were extracted or cleaned up the leukoplakia disappeared. In regard to leukoplakia in the negro, I do not remember whether both of our cases were in full blooded negroes or not. I know one was, and I think both were.

DR. HERMAN GOODMAN, New York: In cases of syphilitic leukoplakia the attending physician finds a four plus positive Wassermann reaction. He institutes antisyphilitic treatment and may push it to the limit. It is not unusual in such instances for the leukoplakia to become much worse. Whether this is due to the syphilis plus the added irritation of the arsenic in the arsphenamin is not known to me. At least one patient under my care passed from an operable condition of the oral cavity to an inoperable one while undergoing the therapeutic test with arsphenamin for syphilitic leukoplakia with beginning degeneration. I have often wondered whether others have seen similar instances.

SOME PROBLEMS IN PUBLIC HEALTH ADMINISTRATION *

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When we take into consideration the comparatively short time that official care of the public health has been recognized in America, with certain noteworthy local exceptions, as a problem of fundamental importance to the citizenry, it is not surprising that the rapid strides that have taken place in this field, especially during the last decade, should be accompanied by difficulties inherent in any widespread campaign that seeks the adoption of a program frequently opposed to customs and habits of life inherited from individualistic forebears. Today the American people as a whole, when the value of rules and regulations affecting public and personal health habits have been convincingly demonstrated, show remarkable willingness to comply with their provisions, even though such compliance may entail a good deal of discomfort and not infrequently physical and mental suffering. There are no other countries in which the almost autocratic powers of constituted health authorities are so generally upheld by the higher courts and sustained by the force of enlightened public opinion. That a noisy and troublesome minority is to be found in practically every community, which, through ignorance, malice or alleged personal conviction, is with difficulty made to comply with well established and fundamental principles underlying the preservation and promotion of public health is a matter for regret but by no means for discouragement.

The influence on the public of the teachings and practices of false prophets and charlatans under a variety of high sounding titles, of unscrupulous, badly informed, commercially minded editors and publicists is indirectly proportionate to the efficiency with which official and unofficial health work is administered and its value convincingly demonstrated; so that the best, indeed the only, weapon with which to fight effectively these opponents of public welfare is good public health work and effective, sane publicity regarding its accomplishments and aims.

A certain number of people even in enlightened communities have always worshiped false gods, and even in this age of scientific progress that number is by no means inconsiderable; but we may be confident that truth will ultimately prevail and that the teaching and practices of those who cannot or will not recognize and acknowledge it will become negligible as a factor in the proper conduct of public health administration.

The difficulty experienced by states and local communities in securing qualified health administrators and adequate staffs of co-workers and subordinates is dependent on a number of well recognized conditions: First is the comparatively recent recognition by the medical profession and public of the fact that public health work as a career is a true specialty for which training, experience and certain fundamental personal qualifications are essential to success. Universities and medical schools are now placing much more emphasis on the importance of a knowledge of hygiene and sanitation as part of the equipment of every well grounded physician, and a number of special schools are industriously turning out men and women technically trained in public health, but the demand for qualified men with a reputation of having made good, especially in the more important positions, is far greater than the supply. Administrative ability in public health and other fields is not a common human attribute. It is usually inborn, but is susceptible of being acquired only in the rough school of experience. Contrary to a frequently expressed opinion, I believe that it is no more uncommon among members of the medical and allied sciences than other professional groups; but the fact remains that, among a large number of persons who by intelligent application may become technically proficient in various branches of public health work, only a very small percentage will prove to possess a high degree of administrative ability, for which reason—in order that the demand for such persons may not only be met but also maintained—public health work must attract a far greater number of persons than is the case at present, and not only a greater number but more of the right type. This cannot be brought about until certain fundamental drawbacks are eliminated or largely reduced. Of these, I may point out the inadequate financial return accorded to the higher grades of public health workers, which averages far less than is available in the private practice of medicine and in the practice of most other learned professions.

It is perfectly true that official public health salaries are showing a distinct tendency to be revised upward, largely for the reason that there is a popular demand for efficient public health work, and a gradual dawning on the consciousness of the public and of state and local governing officials that certain qualifications are essential to its performance, and that the attainment of such qualifications involves the expenditure of a great deal of time, large financial outlay, and often much personal sacrifice, which are justly entitled to an adequate return.

He who elects to devote the fruits of study and experience to the service of public health as his sole or principal life work thereby takes a step which it is difficult or impossible to retrace, should he wish to do so. In this country, the chief administrative health official is usually a physician. His training has been, in the majority of cases, in the general practice of medicine or one of the many specialties. But though knowledge of the medical sciences is the basis on which the qualifications of an efficient health officer rests, a good physician will not necessarily make a good health officer; and, conversely, official health work fully entered on by no means enhances the prospects of suc-

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cess in medical practice, but, as shown by experience, actually decreases it. In this respect, the health officer's position is quite unlike that of other administrative officials whose tenure of office usually entails little or no sacrifice of business or profession, or only a temporary one, and who has been under no expense of time or money to qualify himself for holding office. Indeed, many of them derive much benefit from the reputation and associations afforded by public service. Yet, notwithstanding these undeniable facts and the overwhelming importance to the welfare of a community of the work of an efficient health officer, when we use our efforts to have an adequate salary granted to him, how frequently are we met by the statement: "Why, we can't pay the health officer as much as the mayor, governor or other official," or "We need the money for parks, lighting, paving, the police and fire department," or "We can't compete with private business."

The health officer giving full time to his work has practically no other means of supplementing his income. He should not be supported in luxury, but in all justice and for the general interest of public health work throughout the country, be granted, as Mr. Hugh Frayne has so well expressed it in regard to labor, not only a living but a saving wage, that he may support himself and family in reasonable comfort, and when incapacitating illness or death ends his earning capacity, have something left for his dependents, besides life insurance, which is unfortunately not usually the case.

Another important deterrent to entrance on public health work is uncertainty of tenure of office, and freedom from political interference with the authority of the health officer. Until the American people with their surpassing genius for efficiency in the conduct of private business insist that a like efficiency be exhibited in the management of national, state and local affairs, which is strictly a business and requires the services of those who are qualified, other than by political and personal affiliation, the health officer will continue to be regarded, as he now so frequently is, as just a member of the great army of office holders, good, bad and indifferent, toward whom the public is so prone to assume an attitude of extreme cynicism, if not suspicion. But that same public, absolutely responsible for the character of its official representatives, seldom takes the trouble by organized and efficient effort to make its influence felt, even in matters so vital to its interest as the preservation and promotion of the public health.

It is not surprising, therefore, that public health service is frequently hampered by the ignorance and selfishness of partisan politicians who are too short-sighted to realize the responsibility they assume in interfering with the machinery for protecting the health and lives of the people. If a deserving health officer cannot count on the organized support of the community that he serves, he is pretty certain sooner or later to find that his office is desired by some one backed by political or personal influence, or both.

Though laws and regulations regarding tenure of office have been enacted in several states and communities, it may be truthfully stated that in the absence of effective public support a health officer may be, and not infrequently is, compelled to relinquish his office because he is persona non grata with certain political or commercial interests, who by constant nagging, interference with his duties and his official staff, and efforts to discredit his work, make it impossible for him to do his work effectively. It is true that if he has made good he can always find another position; but his going means a loss to his community, frequently a good deal of personal sacrifice, and the necessity to work amid strange surroundings in which he is not familiar with the local problems and the attitude of the people toward public health. It takes time for a health officer to establish himself and to do effective work, and the interchange of health officers constantly going on throughout this country between states and cities for one or more of the reasons that I have mentioned makes for general inefficiency in public health work.

A word regarding civil service. I believe that with its well recognized defects, but few, if any, state health officials would voluntarily dispense with the civil service system. In order, however, that it may help and not hinder efficient public health work there should be provisions, certainly in the case of technical appointments, that only such persons should be admitted to examination as are qualified according to the regulations of some responsible central health organization, as, in the state of New York, by the public health council.

While no one will deny the desirability, for various reasons, of appointing to office residents of a state, and, if possible, in the case of local appointments, of a community, it so frequently happens that they are not available that for the higher positions, at least, examinations should be thrown open to nonresidents, if not to noncitizens who are properly qualified. Too much weight should not be placed on the written examination, and there always should be granted to the appointing power a period of tryout of several months by means of provisional appointment. Furthermore, the appointing power should not be restricted to the first man or woman on the list, but be given some choice in selecting the candidate. In general, if civil service officials, both state and local, perform their work with a single eye to efficiency in public service, it will be found, certainly so far as health officials are concerned, that they will be granted full support and cooperation.

CONCLUSION

If I have seemed to dwell too pessimistically on public health service as a career, it is not for the reason that the department over which I preside and which for so many years was administered by my distinguished predecessor, Dr. Hermann M. Biggs, has suffered from the conditions that I have endeavored to outline. Quite to the contrary, since its reorganization and for the last ten years it has not only been left absolutely free to do its work without interference, political or personal, but has had the fullest support, sympathy and cooperation of the various governors and legislatures, irrespective of party affiliations. It is because I know that such a condition of affairs is possible, though not present in many states and local communities, including some in the state of New York, that I have the utmost confidence that its prevalence throughout the whole country is merely a matter of time, which, judging by the progress that is now being made, should not be long deferred.

ABSTRACT OF DISCUSSION

Dr. A. J. Chesley, Minneapolis: Dr. Nicoll's statements are best appreciated by administrative officers who periodically face the people who make appropriations for state, provincial or city health work. In public health work certain objectives are sought, well tried procedures are used, and the results that may be obtained under given conditions are known. When people better understand public health work, they will support it and more willingly suffer the incon-

veniences Dr. Nicoll mentions in order to obtain better health. But reduction of expenditures rather than better health work seems to be the chief idea of those who make the appropriations. Funds to aid victims of a great disaster or for the control of an epidemic are easily secured, when funds for prevention have been denied. A health officer must keep in mind that he is health officer for the people as a whole and not for only those who approve his methods. He must modify his program according to the availability of resources and to the possibility of results. When he considers health work as a career, he reflects that some of our best health officers have been replaced purely by the political preference of some one who does not even understand the work. As Dr. Nicoll said, a knowledge of local conditions has a great deal to do with success, and even our best qualified men must acquire such knowledge to succeed. The majority of state and city health officers have risen from the ranks. Medical students give attention to preventive medicine and public health, but they learn little of the practical difficulties familiar to those who have survived the school of experience. The student instruction is necessary and valuable, but knowing the whole situation from experience, one hesitates to recommend public health work as a life work. The cults that guarantee everything apparently have more influence with legislative bodies than well qualified medical men, scientists or sanitarians. What wonder we become pessimistic when considering public health work as a life work.

DR. JOHN A. FERRELL, New York: It is exceedingly unfortunate that the evil influences of politics continue to be so destructive to the maintenance of high standards in the field of health. Although we are only in the fifth month of this year, three state health officers who have been rendering creditable service have been removed by governors. In certain instances it has been alleged that the promotion of the political aspiration of the governor prompted removal. In two states, the governor vetoed legislation designed to upbuild the state health service and to increase its usefulness. Four state health officers who have rendered exceptional service fear removal this year. It seems that the time is ripe for the health forces to endeavor to bring about legislation that will give security of tenure to men who equip themselves to serve effectively in public health positions. Another important point has been mentioned. It was my pleasure only two or three weeks ago to accompany a commission of foreign health officials to visit three or four state health organizations. In two small cities and two counties I found that the local health officers are actually receiving larger salaries than are the state health officials, and there is a tendency in some of the counties where city and county are combining resources to pay larger salaries than the states are paying. It would be logical if the salary scale could be so arranged that advancement from the local position to the state position would carry increased compensation. The situation is not satisfactory in many states. Measures that will give security of tenure to competent men and women are needed. Merit in the field of public health should be recognized on a basis commensurate with the training and ability required to meet the requirements.

DR. J. A. HAYNE, Columbia, S. C.: I have been in service fourteen years. I have been referred to this year by a senator from my state as a "flat-tire politician." He has referred to the state board of health as "an eating sore on the treasury of the state." The situation is a very serious one. I have to lecture every year to the senior class of the medical college and point out the beauties and the desirability of entering the public health service as health officers, either municipal or county, or state. The important question to these students is, What is the remuneration? As a man now under our admirable system of medical education cannot probably graduate until he is about 28 or 30 years of age, and usually has a wife and three or four children before he graduates in medicine, the question of remuneration is much more important than it used to be when I graduated. I do not know of any remedy, unless it is that we pledge ourselves in a sort of secret organization that when one fellow goes out of a position we will see to it that a position is opened to him in some other part of the country. That is about the only satisfactory solution. Whether this can be done or not, I do not know, but I am heartily in favor of it.

DR. JOHN E. MONGER, Columbus, Ohio: In regard to the situation under which we operate in Ohio: In 1917 our state board of health was succeeded by a public health council, which was a nonpartisan body of four men; the tenure of office of each member is four years. Two members of this council must be physicians. In 1917 the appointment of the health commissioner was placed in the hands of the public health council. We were very fortunate in having Dr. Allen Freeman in Ohio, who put our perfectly wonderful law in operation. In reorganization of the state government in 1921, Dr. Freeman was displaced from politics and made director of health. The tenure of office is coincident with that of the governor, two years. In public health matters we must teach politicians. We must realize that politicians are always going to control state government, and ideals, whatever they may be, will only in rare instances rule. A health department is not a political asset, but distinctly a political liability and if we can teach the politician that the health department is not a liability but a distinct asset, then we shall go a long way to remove from public health the burden it is under.

DR. A. T. MCCORMACK, Louisville, Ky.: We have permitted ourselves to get at the wrong angle of this discussion. Unfortunately, and necessarily, the remuneration of a health officer is an essential feature, but from the point of view of ourselves and of public interest, the important thing to instill into a young man who desires to enter into this branch is the opportunity for rendering service. If he has not the desire to render service, he ought not to enter the public health field. Necessarily in this age of economic attrition this eliminates a large number of men who would make a desirable addition to our specialty. At the same time, it must be recognized that it is developmental; and if he brings to it the spirit of service, he will secure from it from year to year public confidence and therefore public remuneration. In the meantime, as in every battle and warfare, there will be casualties, and the only regret is that some of the outstanding casualties, like those in war, are among the most effective and efficient of the general officers in the service. They cannot be avoided. I think it rather fortunate that there should be attacks on the health officer, such as will put him in the spotlight and enable all the people to see all the virtues he has. As a rule, the attack of the minority is of violent character because it is political and attempts to influence the public by machine methods and thus defeats its purpose.

DR. MATTHIAS NICOLL, JR., Albany, N. Y.: I was a little surprised by Dr. Monger's remark that public health is not a political asset. This is true only in the sense that the administration of public health in the nation, state and community should be absolutely free from political interference. On the other hand, there is no greater asset to a state or local administration than an efficient, independent health department. In the state of New York the political complexion of the governors and legislators changes about as frequently as the constitution permits, and yet since the reorganization of the state health department in 1914 and up to the present time there has been no governor or legislature that has not supported and encouraged the work of the state department of health, and, in my opinion, greatly to the satisfaction of the people of the state and to the enhancement of their own reputation as their representatives. Unfortunately, this is not usually the case in regard to the conduct of public health in local communities, where it is too frequently regarded as simply a cog in the political machine. Local politicians are notoriously short sighted, usually inclined to act in accordance with what they believe are their immediate political necessities and with but little regard for the welfare of the people and their present and future needs. In regard to the pay, tenure of office and dignity of the position of health officer, we in this country have much to learn from England, where, to be sure, they have had a much longer experience with official public health than we. As an example, and by way of contrast, those who read the *Medical Officer* will recall that not long ago the governing council of an important English city advertised for a health officer at a salary considerably below the rate

which the office had been accustomed to receive. As a result the association of English health officers practically blackballed this city, so that it could not possibly obtain an efficient health officer, except on the terms previously allowed. Furthermore, the health officer in England is assured of a life tenure of office while he is able to give efficient service, and no political consideration has any possible bearing on his administrative acts. This is a state of affairs to attain which we must all look forward in this country. It is not impossible of realization by any means, and I think all will agree that there is a decided trend throughout the whole United States in that direction. In the bringing about of this happy state of affairs, some national body such as the American Public Health Association can be of the greatest service. Too little publicity is given to the frequent removals from office, for no other than political reasons, of efficient health officers of large cities and states.

MAXILLARY SINUSITIS

THE PROBLEM OF COOPERATION *

CARL W. WALDRON, M.D.
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Authors of textbooks on oral surgery and rhinology are at variance on points of etiology, operative procedures and postoperative treatment of infections of the maxillary sinus. These differences of opinion and practice have been reflected in the opinion and procedures of a large number of members of both the medical and the dental professions. Such a condition of affairs is greatly to be deplored.

There is unquestionably a feeling of uncertainty among the majority of members of the dental profession regarding the proper handling of all conditions relative to the antrum of Highmore. Others specializing in exodontia and minor oral surgery confidently undertake the treatment of maxillary sinusitis with a lack of knowledge of the fundamental points of etiology and pathology. Frequently, the possibility of associated infections of the overlying sinuses is not considered, and nasal obstruction as a factor in the causation of sinusitis, or reinfection, is disregarded.

On the other hand, medical opinion and practice present no greater uniformity. A considerable number of rhinologists in their daily practice fail to take into account the fact that dental infection quite frequently causes maxillary sinusitis, or prevents its resolution. Many, however, consider it of some importance, yet merely refer the patients to their dentists for examination and treatment, without taking the trouble to talk the case over with the dentist concerned in order to assure full understanding and complete cooperation. A very small number of rhinologists lay great stress on the importance of dental infection and the possibilities of resolution and cure of chronic maxillary sinusitis by the eradication of dental infection alone, relegating to sinus and nasal surgery and other intranasal treatments a relatively minor rôle. A considerable number of physicians are of quite neutral opinion regarding this problem. It is surprising how often one hears of the advice of the medical man to have the dentist remove a tooth and establish antral drainage through the tooth socket.

On first consideration, these marked differences of opinion seem hopeless of solution, yet I am sure that more thorough teaching of the fundamental facts concerning the development, anatomy, physiology, histology and pathology of the maxillary sinus will provide a basis for better understanding and cooperation.

I know of no better agency for the furthering of this end than the members of the Section on Stomatology. A large number of us are qualified and licensed to practice both medicine and dentistry and, consequently, are in close contact with physicians, rhinologists, dentists and exodontists. Many of us are responsible for the teaching of this borderline subject to dental students, and our responsibility and duty to present the fundamental points clearly and fairly should be fully realized. We are also responsible for the promotion of efficient cooperation between dentist and physician. A few members of our section actively practice rhinology and are in a position to enlighten the nose and throat men concerning the modern methods of dental diagnosis and the handling of dental infection beneath the sinus floor. By this means, increased cooperation is assured.

The most important fundamental is a clear understanding of the development, anatomy and physiology of the maxillary sinus. That it is essentially a paranasal structure from developmental and histologic standpoints should be clearly understood. The frequency of the very close proximity of root ends and antral floors should be thoroughly demonstrated to the dental student in order to encourage careful handling of infection in this region. This may be accomplished by a detailed study of cross sections, dry specimens, roentgen-ray films and clinical observations in the exodontia and oral surgery clinics. A knowledge of the rich circulatory anastomosis of the vessels of the periosteal layer of the antral mucosa, the vessels of the spongy bone of the maxilla and the vessels covering the alveolus and the roots of the teeth, as demonstrated by Strubell, should impress one with the possibilities of spread of infection from the dental area to the sinus, and vice versa.

The gross anatomy of the maxillary sinus, the position of its ostium, its walls, variations in size, its average cubic content and the average surface area of mucosa should be matters of common knowledge. The relationship of the antrum and other nasal sinuses should be studied. Its vulnerability may thus be appreciated.

The appearance of the normal antral mucosa should be known and its histologic structure well understood. With this foundation, a study of the gross and microscopic appearances of infected sinus mucosa will provide a sound basis for the consideration of the various methods of treatment.

The symptoms of acute inflammation of the sinuses should be well known to dentists and physicians. Dentists finding infection of the upper bicuspids and molars should be able to question the patient regarding nasal and other symptoms indicative of sinus infection. By so doing many patients may be referred to the nose and throat specialist. Phelps [1] considers extreme variability in the amount and character of the nasal discharge from day to day to be diagnostic of dental etiology.

The etiology of maxillary sinusitis has been a matter of extraordinary difference of opinion. Dental causation has, for instance, been credited with from 5 to 100 per cent. of the cases by different observers. A brief survey of the literature impresses one with the probable influence of prejudice and personal opinion on the positive statements set forth. The oral surgeon treats many cases of apparent dental origin, whereas the rhinologist sees a majority showing close relationship to nasal

* Chairman's address, read before the Section on Stomatology at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

1. Phelps, K. A.: Maxillary Sinusitis of Dental Origin, Minnesota Med. 5: 299 (May) 1922.

obstruction and recurrent coryzas, or following influenza, and each in turn magnifies or minimizes the importance of dental infection. The percentage statistics so positively expressed are obviously not based on modern methods of dental and alveolar diagnosis. Thorough vitality testing, thermal, electrical (exploring with the dental burr, if necessary) and dental roentgenography, as perfected today, were not sufficiently correlated with maxillary sinus treatment to warrant statistical conclusions. Until a group of well trained men can combine to diagnose carefully, treat, follow up and recheck such cases, statistics had better be kept under cover. They fulfil no useful purpose and mislead members of both the medical and the dental professions. The patients consequently receive less efficient treatment. Therefore, these published statistics may well be forgotten, and in their stead a liberal, broad-minded summary of our present information should be thoroughly taught dental students and the dental and medical professions at large. What does it matter whether dental infection be responsible for 15 or 50 per cent. of antral infections? The important thing ever to keep in mind is the intimate, anatomic and circulatory relationship of the teeth and investing tissues and the maxillary sinus, and the consequent reciprocal relationship of infections in either dental or antral regions. Cause and effect may be a matter of uncertainty in many cases. This is of little moment and should not materially affect the plan of treatment. Thorough examination and diagnosis of the sinus and the underlying dental region should be the rule. Coincidental infection of the antrum and teeth, without definite causal relationship, must be more common than we suspect.

Oral surgeons undertaking the treatment of maxillary sinusitis should appreciate the frequency and importance of nasal origin, septal obstruction and secondary infection of the antrum from disease of the overlying frontal and ethmoidal sinuses. This paves the way to efficient rhinologic cooperation.

Are we giving sufficient attention to the prevention of infections of the maxillary sinus? I think not. Along with the larger problems concerning the prevention of dental caries, pulpal infection and dental periclasia, we must consider the ever present problem of the dentist extracting teeth beneath the antral floor. I am convinced that the average dentist has received but casual training, if any, in the handling of operative exposures of the sinus cavity. Here, as elsewhere, the essentials of good surgical procedure are the careful handling of tissues under direct visual control, and the reduction of trauma to the minimum. How rarely are these fundamentals observed. Many dentists on discovering an accidental perforation of the antrum are unduly alarmed. Others blindly explore and curet the opening or sinus itself, without rule or reason, and in most instances postoperative observation and care are sadly lacking.

Lyons,[2] from a detailed study of a hundred cases of empyema of the antrum of Highmore secondary to the extraction of teeth, concluded that in most instances penetration occurs, first, as a result of the rocking movement of extraction, which tears into the antrum at the point immediately above and in contact with the root, and, secondly, as a result of the failure to extract all the root, with subsequent displacement of the root tip into the antrum on attempting its removal. The average duration of the antral infections and fistulas in his series was 349 days, and the average length of time of previous treatment was estimated to be 170 days. An analysis of this series brings out the facts that the dentists were not equipped to handle the situation, nor sufficiently concerned regarding the persistence of alveolar fistulas. The average duration of treatment was little short of six months, and the various forms of treatment carried out showed a lack of understanding with regard to the pathologic condition and the surgical principles involved in cure. Most cases were treated through the alveolar fistulas, and the various forms of treatment stimulated the formation of an epithelial lining and the consequent permanent opening.

We cannot ignore this situation nor dodge our responsibilities in the matter of the training of dentists to handle these conditions correctly. As long as root ends bear a close relation to the antral floor, accidental perforations will not be infrequent. More or less uniform and standardized methods of taking care of infected teeth should be taught in dental schools. The use of procain should be advocated in order to afford sufficient time for careful operative work under direct vision with good illumination. The necessity of taking steps to reduce traumatism to the minimum, avoiding the fracture of alveolar process or root ends, should be emphasized. Some degree of buccal alveolar process resection is indicated to facilitate the extraction of the tooth and give better access to the diseased area beneath the antral floor. Careful drying of the root sockets will permit accurate visualization of the periapical area, and thorough removal of infected tissue by curettage is made possible. All unnecessary removal of alveolar process beneath the floor of the sinus should be avoided. Forcible irrigation of the sockets should not be done. Gentle irrigation or mopping should be the rule. The dentist carrying out such technic sees what he is doing and is master of the situation when root tips are broken off or the sinus floor is penetrated. He can recover the fractured root end, remove the affected tissue, and assure the closure of the perforation by adjusting the gingival margins and suturing. An edge to edge closure is not necessary nor desirable. The operator must recognize the importance of keeping such cases under observation for a week or so, and the patients should be instructed to avoid sucking at the extraction wound.

Dentists should keep constantly in mind the desirability of protecting the sinus from the bacterial flora of the mouth. Tooth socket treatment of an infected sinus is universally condemned. Should temporary drainage or treatment through the alveolar opening be indicated, every effort should be made to seal it between treatments.

Should the dentist be equipped to take care of the cases of acute maxillary sinusitis that do not respond to nasal palliative measures, such as shrinking the mucosa, inhalations, oil sprays, suction and elimination treatment? Probably in cities and towns where rhinologists are in practice, the need of dental cooperation in relieving such conditions would never arise. In certain districts, however, the dentist would seem better able to establish drainage through the canine fossa than is the physician to puncture the antronasal wall. I feel that dentist should be able to cooperate in such conditions when indicated. If, in spite of such careful handling of the dental condition, an acute maxillary sinusitis supervenes or a quiescent chronic condition lights up, the dentist should be well acquainted with the symptoms in order to enlist the services of the rhinologist and secure prompt treatment.

2. Lyons, H. R.: Empyema of the Antrum of Highmore Secondary to the Extraction of Teeth, J. A. M. A. 78:486 (Feb. 18) 1922.

A consideration of the treatment of chronic maxillary sinusitis opens up another controversial field. One should in fairness give credit to those who differ with us, particularly if one is teaching the subject to students or practitioners. Phelps has called attention to the beneficial effect on many chronic sinus conditions of careful elimination of underlying dental infection. Whether such dental conditions are primary, secondary, or only coincidental matters little. They should be thoroughly taken care of as a routine measure according to the method previously outlined. Realizing the importance of underlying dental infection, the rhinologist should be vitally interested in the method used for its elimination and should refer his patients to the dentist who will operate according to the best oral surgical practice. The time for taking care of the dental infection may be decided after a consultation of the dentist and the physician.

In most cases of chronic maxillary sinusitis, it would seem advisable first to remove the dental infection and postpone other than simple sinus treatment, for the time being, to await results. A few antral irrigations or a Krause window resection to improve aeration and drainage may establish a cure with complete relief of sinus symptoms. Operative relief of nasal obstruction by submucous resection of the septum may be indicated before radical treatment of the sinus is contemplated. If discharge persists for a month or so, polypoid degeneration of the antral mucosa has presumbaly taken place, and prolonged irrigations or other nasal treatments are futile. Removal of this hopelessly infected mucosa is indicated.

The method of choice will depend on the operator. Many can efficiently remove the infected tissue by means of angular curets by the intranasal route. I myself prefer the modified Caldwell-Luc technic carried out under procain-cocain anesthesia. This permits most efficient visualization, affords good ventilation and drainage, and shortens the postoperative treatment. In discussing operative treatment, many writers have been most unfair in criticism. All intranasal procedures are condemned by some, and wildly exaggerated word pictures of the lamentable plight of patients so treated are frequently drawn. Such criticisms may be justified when directed against ruthless resection of the inferior turbinate, and excessive window resections, but are entirely unwarranted when discussing modern rhinologic practice, which rarely interferes with turbinal structure or physiology. Communications between the inferior meatus and antrum, made low and somewhat posteriorly, are free from any postoperative discomfort. A high anterior opening may involve the nasolacrimal canal.

The canine fossa approach has been severely criticized from the standpoint of tooth injury. If the bony opening is not made too large or too low, the pulpal blood supply should in no way be interfered with, and any nerve impairment should be of a temporary nature and inconsequential. This has been confirmed by recent anatomic studies by Neivert.[3] In many cases teeth beneath the involved sinus are missing, or their removal is indicated, and any possibility of dental discomfort need not be considered. Chronic antral infection of nasal origin with normal and complete underlying dentition should, of course, demand the utmost care if treated by the Caldwell-Luc method. In these cases effort should be made to clear up the condition by intranasal methods.

Some writers opposing the nasal opening beneath the inferior turbinate advocate surgical enlargement of the natural ostium. This would surely interfere with the main blood supply and venous return of the antral mucous membrane.

It becomes obvious that we must be broad-minded in our consideration of this whole subject. Pathetic descriptive statements and appeals have no place in the discussion of the various methods of treatment. We must be liberal and fair to others in order that some common ground may present the opportunity for greater uniformity of opinion and practice. To further this end this contribution is submitted.

La Salle Building.

3. Neivert, H.: Morphologic Variation as a Factor in the Symptomatology of Paranasal Sinus Disease, Arch. Otolaryngol. 1: 367 (April) 1925.

ABSTRACT OF DISCUSSION

DR. T. L. GILMER, Chicago: Dr. Waldron spoke of cooperation between the rhinologist and the oral surgeon in sinus diseases. That is very important. If the disease originates in the nasal fossa, then it is a case for the rhinologist. If it has its origin in a tooth, then it is a case for the oral surgeon. It may be necessary, in order to determine this positively, that a consultation be had with the rhinologist. Teeth are often the cause of maxillary sinusitis. I examined a large number of skulls of cadavers some years ago, and found that a large percentage of them showed signs of maxillary sinusitis, and a considerable proportion were directly associated with infected teeth. Some chronic cases originating in the nose may be treated by the rhinologist by irrigation, but one should hesitate about puncturing the sinus from the nose or elsewhere in the acute stages. If, however, there is chronic infection, whether it is caused by the teeth or whether the disease comes through continuity of tissue from the nose, and if curettement is indicated, the latter is best not done through the nose but through an opening made in the buccal wall of the jaw, the Caldwell-Luc operation. The opening should be sufficiently large that one can see into and readily explore the sinus. An opening through a tooth socket is not a good approach to the sinus. It affords insufficient room to observe the condition of the entire sinus; besides there is greater thickness of bone to be cut away. If the Caldwell-Luc operation is done, a mucoperiosteal flap is first lifted and then the sinus is opened. The buccal wall is easily penetrated by drills and enlarged by burrs, a much easier and more delicate operation than if chisels and gouges are used. After the sinus has been cleaned out, a large opening is made through the inferior meatus of the nose for permanent drainage; it is packed with iodoform gauze, the gauze being brought out through the opening into the nasal fossa. The opening in the buccal wall is at once closed by suturing the mucoperiosteal flap back in place. It seems to me that is the best possible treatment for maxillary sinusitis requiring curettement.

DR. ROBERT H. IVY, Philadelphia: I should like to support Dr. Waldron in what he says about the little damage that is done the teeth in these radical operations for maxillary sinusitis. Assertions have been made that the teeth are damaged by the incisions and the cutting away of the bone around the roots of the teeth. If the bone is removed high enough so as not to expose the roots of those teeth, in most cases no damage is done to them. About two years ago, with the cooperation of Drs. Ridpath, Skillern, Coates and other rhinologists in Philadelphia, I was enabled to make some studies of patients who had had radical operations on the maxillary sinus. Tests that I conducted on the teeth showed that, while the nerve supply might have been interfered with temporarily, yet after a certain number of months, or even less time, sensation almost invariably returned. The assertion that a tooth is dead because the nerve supply is cut off is not true. Injury to the ulnar nerve may cause numbness of the fingers, yet they are not dead; they have a blood supply. The blood supply of the teeth is not cut off in these operations because of the rich anastomosis. In any case, even if the teeth are occasionally destroyed by

this operation, it is the only procedure that I know of that will cure these chronic sinus conditions.

DR. CARL W. WALDRON, Minneapolis: One point I want particularly to make is that this arguing about percentages is futile. The thing to remember, along with a fundamental knowledge of the physiology and vascular relationship, etc., is that infection may spread from one point to another. It must also be remembered very clearly that infection may be coincidental, with very little relationship. Dr. Phelps and I were trained together in nose and throat work. We had, one might say, the radical form of training. Most of our patients with maxillary sinusitis had been treated previously by rhinologists by intranasal and the more conservative methods. We almost invariably performed the Caldwell-Luc operation. Dr. Phelps became associated in Minneapolis with a rhinologist who was particularly impressed with the importance of dental infection. Today Dr. Phelps performs the Caldwell-Luc operation very rarely. He feels that taking care of dental infection will give the patient that opportunity to take care of the infected antrum that has been irritated from time to time. In most cases, of course, he carries out a few intranasal irrigations, possibly a window resection. The results have been very promising. When he changes his opinion so markedly, I feel that there is certainly something in the premise that dental infection will cause the recurrence of nasal sinus infection, or will be the turning point in preventing coryzas (that may develop on account of septal obstruction) from going on to resolution. So, we must remember that sinus infection may be present and yet not be associated with dental infection, and that if there is dental infection beneath an antral floor, good common surgical sense demands its removal.

PATHOLOGIC PHYSIOLOGY OF LIVER IN RELATION TO INTOXICATION AND INFECTION *

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[EDITORIAL NOTE.—This paper, together with the paper of Dr. McClure, Dr. Mendenhall and Mildred Huntsinger, and that of Drs. Lyon and Swalm, which follow it, conclude the symposium on "Liver Function." In our last issue we published the papers of Drs. Carlson, Mann and Greene.]

The physiology of the liver is in large part concerned with the remarkable capacity of the organ to select certain substances from the blood and, after various modifications, to store them in its cells, to return them to the blood or to eliminate them with the bile. In this discussion of the pathologic physiology of the liver it seems desirable that special attention be drawn to the ability of the liver to select from the blood stream and fix within itself various substances that are foreign to the normal metabolism of the body.

It is well known that the liver removes certain substances from the blood with such accuracy that impaired elimination of them may serve as an index of hepatic injury. The experiments of Whipple, Peighthal and Clark [1] showed that the dye phenoltetrachlorphthalein may be used as a test of the efficiency of liver function. Rowntree, Hurwitz and Bloomfield [2] point out the relatively slight change in chemical constitution which determines the mode of elimination of three closely related substances. Phenolphthalein is excreted both in the urine and in the bile. Phenolsulphonephthalein, in which the CO group of the former substance is replaced by the SO_2 group, is excreted chiefly by the kidneys. Phenoltetrachlorphthalein, in which hydrogen atoms of the phthalein radical are substituted by chlorin, is specifically excreted by the liver.

After laboriously testing a large number of chemically related dyes in white rats and in dogs, Delprat [3] found one, namely, rose bengal, which is eliminated in both of these animals only by the bile and may be used like phenoltetrachlorphthalein as an index of disturbed liver function. In the present connection the attempt to enumerate all the substances that are known to be excreted in part or wholly by the bile would not be profitable. Copper salts, hexamethylenamin, methylene blue and amyl alcohol, are substances which in this relation have for one reason or another attracted attention. The ability of the organ to select and eliminate these substances is doubtless incidental to some phase of normal metabolism.

SOLUBLE TOXIC SUBSTANCES

From the standpoint of pathology it is especially noteworthy that certain toxic substances introduced into the body have a selective destructive action on the liver. Although phosphorus produces widespread fatty degeneration, its effect on the liver is especially conspicuous. Chloroform introduced into the body by inhalation or by other means brings about a necrosis of cells almost wholly limited to the liver, and when the quantity of the anesthetic is sufficient a very large part of the organ may be destroyed. Graham [4] found that a similar necrosis is produced by iodoform and bromoform, by dichlormethane and tetrachlormethane, and by monochlorethane, monobromethane and mono-iodoethane; that is, by a variety of hydrocarbon derivatives in which halogen atoms are combined with carbon. Why substances of this chemical constitution find lodgment in the liver and cause necrosis is not evident.

There is a large amount of evidence, much of doubtful value, to prove that the liver is capable of destroying certain toxic substances. The subject has been reviewed recently by Gunn.[5] It has been shown by Buys [6] that emulsions made with the liver of the frog and of the rabbit destroy hyoscyamin when incubated with it, whereas the liver of the dog, which is more susceptible to the drug, fails to destroy it. This observation, according to Gunn, has been the starting point of many experiments to determine the power of liver and other tissues to destroy alkaloids. Schirn [6] found that a certain dose of atropin introduced into the peripheral circulation was as effective as twenty times this dose injected into the mesenteric vein. Cloetta and Schirn [6] have obtained evidence that tolerance to atropin acquired by continued administration of the drug to rabbits is accompanied by increased ability of liver tissue to destroy it in vitro. Gunn finds this conclusion in accord with present knowledge, but finds no convincing evidence that congenital or acquired tolerance to alcohol or to morphin is referable to destruction of these substances by the liver. The action of the organ on various toxic substances still excites widespread interest among pharmacologists.

PARTICULATE MATTER

The foregoing brief references show that the liver can remove from the blood certain substances that are

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* From the Henry Phipps Institute, University of Pennsylvania.

* Read before the joint meeting of the Section on Pathology and Physiology and the Section on Gastro-Enterology and Proctology at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

1. Whipple, G. H.; Peighthal, T. C., and Clark, A. H.: Bull. Johns Hopkins Hosp. **24**: 343, 1913.
2. Rowntree, L. G.; Hurwitz, S. H., and Bloomfield, A. L.: Bull. Johns Hopkins Hosp. **24**: 327, 1913.
3. Delprat, G. D., Jr.: Studies on Liver Function, Arch. Int. Med. **32**: 401 (Sept.) 1923.
4. Graham, E. A.: J. Exper. Med. **22**: 48, 1915.
5. Gunn, J. A.: Physiol. Rev. **3**: 41 (Jan.) 1923.
6. Cited by Gunn (Footnote 5).

soluble in the plasma. It is difficult to determine how this selection is brought about. Anatomists are familiar with the intimate relation of the wide capillaries or sinusoids of the liver to the hepatic cells. The lining endothelium is so delicate that injections made into the vessels readily penetrate between and perhaps into liver cells. A significant peculiarity of some of the cells which line the sinusoids of the liver is their ability to fix and engulf minute particles of varied composition which have found their way into the circulating blood.

The stellate cells of Kupffer are especially active as phagocytes. They are regarded as endothelial cells because they form part of the vascular lining and at the same time they are in immediate contact with the liver cells. They have an important part in the fixation of inorganic particles, bacteria, colloid material and perhaps of substances dissolved within the plasma. We are not at present concerned with their relation to other mononuclear cells or to a hypothetic reticulo-endothelial system. It is noteworthy that similar if not identical cells within the spleen ingest all the substances that are taken up by the stellate cells of the liver, but these changes in the spleen occur on a smaller scale and are in some instances at least contributory to those which occur in the liver.

It has long been known that particles of insoluble substances so finely divided that they can pass through the lumina of capillaries are fixed within the liver by phagocytic cells. Carbon particles which have entered the blood stream are held within the liver, and in the advanced pulmonary anthracosis of miners, anthracotic pigmentation of the liver may occur. In unusual instances, anthracotic pigmentation of the liver, as Professor Welch [7] has shown, may cause cirrhosis.

An accurate method for studying the deposition of particulate matter has been devised by Drinker and Shaw,[8] and their studies demonstrate that the liver is the organ chiefly concerned in removing insoluble particles from the blood. The particles which they have selected for investigation approximate in size many of the bacteria that invade the blood stream, and their experiments, which throw much light on the fate of bacteria within the blood, will be considered in some detail.

Manganese dioxid in the form of particles not greater than 1 micron in diameter suspended in acacia solution was injected by Drinker and Shaw into the venous system of cats. If from 1 to 2 mg. of manganese dioxid per kilogram of body weight was injected, manganese in most instances had disappeared from the circulating blood after eighteen minutes. Quantitative determination of the manganese deposited in various tissues after from one to one and a half hours showed that 90 per cent. was recoverable from the liver, lung and spleen, the averages of several experiments for these organs being 38.3, 47 and 4.3 per cent., respectively, whereas the manganese content of kidney, stomach, small intestine, colon, brain, spinal cord and muscle was little if at all increased.

Further study [9] showed that the manganese present in the lungs of the cat rapidly diminished during the first twelve hours following intravenous injection. Simultaneously, manganese in the liver gradually increased and after eighteen hours exceeded that in the lungs. There is evidently a gradual transfer of manganese from the lungs to the liver. Later the quantity of manganese in the liver diminishes gradually, and after a week manganese is almost completely eliminated from the body. Excretion occurs in part by way of the bile, and much of that which is thus eliminated is in the form of undissolved particles precipitable by centrifugalization.

From these experiments it appears that the liver is the ultimate site of deposition of most of the manganese dioxid introduced into the venous system. The preliminary deposition of a considerable part in the lungs of the cat is exceptional, for in other animals which they have tested Lund, Shaw and Drinker [10] found that the liver was the first and chief site of deposit. In rabbits, dogs, guinea-pigs, rats, chickens and turtles, nearly all the injected manganese (in most instances from 80 to 95 per cent.) was recoverable after one hour from the liver, whereas the amount in the lung was very small (usually from less than 1 to 3 per cent.). Hence in almost all vertebrates the liver removes insoluble foreign particles from the circulating blood within a short time after its injection. It is noteworthy that final elimination of manganese from the body is more rapid in the rabbit than in the cat.

When Drinker and Shaw injected manganese dioxid into the venous system of cats, they found after one hour some particles still free within the capillaries of the liver, but the greater part of the magnesium dioxid was within the Kupffer cells, and these were evidently the most effective agents in removing it from the circulation. A few particles were found on the surface of hepatic cells. The quantitative studies that have been described are in large part an index of the functional activity of the Kupffer cells.

COLLOID SUSPENSIONS

The fate of certain substances introduced in colloid form into the circulating blood is almost identical with that of the finely divided material just considered. Numerous studies, especially those made with silver in colloid suspension, have shown that the liver is the chief site of deposition and the Kupffer cells are primarily concerned in removing the metal from the blood. Voigt,[11] using a concentrated suspension, found that the liver contained a very large part of the recoverable silver. In three rabbits, 38, 89 and 63 per cent. of the injected material was recovered from all tissues, and of these quantities 35, 80.7 and 51.8 per cent., respectively, was found in the liver. This observation is evidently widely applicable to heavy metals in colloidal suspension, for Duhamel [12] has found in the liver by chemical analysis a large part of the colloidal platinum, silenium, mercury, copper and iron introduced into the circulating blood of rabbits. Within fifteen minutes after intravenous injection of colloidal platinum, he found the cells of Kupffer full of gray granules, and by quantitative determination two thirds of the injected platinum was recovered from the liver. The spleen contained only traces of the metal. Almost identical results were obtained with colloidal silenium and mercury, the liver containing two thirds of the dose employed and the spleen and kidneys little if any of the metal. When colloidal copper was employed, slightly less than one half of the injected metal was recovered from the liver, and almost all of the remain-

7. Welch, W. H.: Bull. Johns Hopkins Hosp. **2**, 1891.
8. Drinker, C. K., and Shaw, L. A.: J. Exper. Med. **33**: 77 (Jan.) 1921.
9. Drinker, C. K.; Shaw, L. A., and Drinker, K. R.: J. Exper. Med. **37**: 829 (June) 1923.
10. Lund, C. C.; Shaw, L. A., and Drinker, C. K.: J. Exper. Med. **33**: 231 (Feb.) 1921.
11. Voigt, J.: Biochem. Ztschr. **62**: 280, 1914; **63**: 409, 1914; **68**: 477, 1915; **89**: 220, 1918.
12. Duhamel, B. G.: Compt. rend. Soc. de biol. **82**: 724, 1919.

der was found still present in the blood. Similar evidence of fixation of colloidal iron within the liver was obtained.

Silica in the colloidal state as a sol in the form of orthosilicic acid kills rabbits when given in large dose, and Gye and Purdy [13] reach the conclusion that it acts primarily on vascular endothelium of the liver and of the renal glomeruli. When given in a small quantity daily, it causes cirrhosis of the liver.

RED BLOOD CORPUSCLES

It is well known that red blood corpuscles that have undergone injury as the result of typhoid fever or other form of intoxication are ingested by mononuclear phagocytes within the spleen, bone marrow, liver and lymph nodes. Whenever the blood of one animal is transfused into another the spleen undergoes enlargement, and the sinuses contain phagocytes distended with erythrocytes. These disintegrate within the phagocyte, and hemosiderin, which gives the characteristic microchemical reactions of iron, is found within the cell as yellowish brown pigment. There is some siderosis of the bone marrow and abdominal lymph nodes, as well, but the liver shows no noteworthy change. Rous and Oliver [14] found that the continued injection of blood into rabbits during two months or more finally brought about an immense deposit of iron containing pigment within the liver. The spleen receives and holds hemosiderin for a time and thus protects the liver, but its capacity to store the iron containing pigment is finally overcome, and iron is deposited in other organs, notably in the liver and kidneys. Masses of pigment enclosed in phagocytic cells are found within the sinusoids of the liver; many Kupffer's cells are filled with pigment, and the liver cells, especially at the periphery of the lobule, contain hemosiderin in great quantity. In the kidney, cells of the cortical tubules take up hemosiderin, and when transfusion has been continued during a long period, the cells of the pancreas and of other organs contain the pigment.

The changes observed closely resemble the remarkable disturbance of iron metabolism named by von Recklinghausen hemochromatosis. In this disease the liver is the seat of an enormous accumulation of iron, which may constitute as much as 7 per cent. of the dried substance of the organ (Anschutz [15]; Hess and Zurhelle [16]).

Another important contribution to our knowledge of this disease both of iron metabolism and of the liver has been made by Mallory, Parker and Nye.[17] They found that the administration of small quantities of copper acetate (0.1 gm.) with the food daily during six months or a year caused changes in the liver similar to those of hemochromatosis in man. The deposition of iron containing pigment in immense quantity in the liver was associated with cirrhosis. Pigment first appeared in the endothelial cells lining the sinusoids and later was deposited in the liver cells. The spleen and bone marrow showed little change, and there was no anemia. Disturbance of iron metabolism was doubtless brought about by the strong affinity of copper for hemoglobin, with the resulting formation of cuprohemol. Exactly how this change causes the iron deposit of hemochromatosis is not clear. It is, however, noteworthy that copper is one of the substances that are eliminated from the body in considerable part with the bile.

This accumulation of iron containing pigment in immense quantity within the liver and other tissues represents a deviation from the normal process of pigment formation and destruction and is doubtless in part referable to hepatic functions concerned with the elaboration of bile pigments. It indicates that secretion of bile is intimately associated with the peculiar capacity of the liver, and especially of its endothelial elements, to select and hold certain iron-containing substances which are normally present in the blood stream.

BACTERIA

In the study of infectious disease it is essential to know what changes occur when micro-organisms enter the blood. The first observations on the fate of bacteria introduced in the blood stream are those of Wyssokowitsch,[18] who injected a nonpathogenic microorganism, *Micrococcus tetragenus*, and a pathogenic form, *Bacillus typhosus*, into the veins of rabbits. By cultural methods he found that they were stored in spleen, liver and bone marrow. Werigo [19] injected anthrax bacilli into the vascular system of rabbits, and after a few minutes found them much more numerous in the liver than in the spleen. Bacilli were found in great number in the lung, in which they were ingested by polymorphonuclear leukocytes. Plate cultures made by Arima [20] showed that bacteria injected intravenously into rabbits disappeared from the blood after about one half hour, and were then most abundant in the liver and present in smaller number in the spleen and bone marrow.

Observations of Bartlett and Ozaki [21] indicate that *Staphylococcus aureus* injected into the circulating blood of the dog and rabbit accumulate in great number in the lungs and are ingested by polymorphonuclear leukocytes. At the same time there is abundant deposition of bacteria in the liver and spleen. Leukocytes containing bacteria rapidly disappear from the lung and are apparently carried to the liver and spleen. Bacteria in the liver and spleen are ingested by endothelial and other mononuclear cells (Kupffer cells), but phagocytosis by polymorphonuclear leukocytes is equally active and finally predominant.

Pneumococci and streptococci, like many other bacteria, when injected into the ear vein of a rabbit in doses insufficient to cause death rapidly disappear from the blood after from two to four hours, and the animal remains in good condition. Bull [22] found that if virulent micrococci are injected in quantity sufficient to cause death within from two to four days, they disappear rapidly so that after two or four hours the blood is sterile or contains only a few bacteria. Within five or six hours, bacteria reappear in the blood and steadily increase until the death of the animal. No gross lesions are found in the organs. With less virulent pneumococci or streptococci in the same quantity, a more chronic type of infection follows. Reentrance of bacteria into the blood is delayed and the number present may be small. The animal lives several days, but finally severe septicemia makes its appearance, and, after a period varying from a few hours to two days, death occurs. The animals have

13. Gye, W. E., and Purdy, W. J.: Brit. J. Exper. Path. **3**: 75, 86 (April) 1922.
14. Rous, Peyton; and Oliver, J.: J. Exper. Med. **28**: 629 (Nov.) 1918.
15. Anschutz: Deutsch. Arch. f. klin. Med. **72**: 411, 1899.
16. Hess and Zurhelle: Ztschr. f. klin. Med. **57**: 344, 1905.
17. Mallory, F. B.; Parker, F., and Nye, R. N.: J. M. Research **42**: 461 (Oct.-Dec.) 1921.
18. Wyssokowitsch, W.: Ztschr. f. Hyg. **1**: 1, 1886.
19. Werigo: Ann. de l'Inst. Pasteur **8**: 1, 1894.
20. Arima, R.: Arch. f. Hyg. **73**: 265, 1911.
21. Bartlett, C. J., and Ozaki, Y.: J. Med. Research **35**: 465 (Jan.) 1917.
22. Bull, C. G.: J. Exper. Med. **20**: 237, 1914.

become emaciated, and after death local lesions, such as pericarditis, pleurisy and peritonitis, are usually found. Bull thinks that the progress of septicemia is an accurate index of the severity of infection.

The fate of typhoid bacilli injected into the venous system of normal rabbits was next studied by Bull.[23] They disappear from the blood like pneumococci; bacterial counts of plated cultures following injection of one-fortieth of a twenty-four hour agar slant of typhoid bacilli into the ear vein were as follows: after one minute, 10,000,000 per cubic centimeter; after two minutes, 2,500,000; after five minutes, 100,000; after fifteen minutes, 40; after twenty minutes, 1. Further study has shown that agglutination is almost immediate so that clumps of bacilli are found in blood removed from the heart thirty seconds after injection but have disappeared after seven minutes. Tissues of rabbits removed twenty-one minutes after intravenous injection of typhoid bacilli have given colonies per cubic centimeter of crushed pulp as follows: spleen, 2,000,000; liver, 1,600,000; lung, 100,000; mesenteric lymph node, 1,000; skeletal muscle, brain and other tissues, very few. In view of its size, the predominant importance of the liver in removing bacteria is evident. The fate of bacteria fixed in the liver has been studied. A rabbit received in the ear vein one thirty-fifth of an agar slant culture of typhoid bacilli; pieces of liver were removed at intervals and the number of bacteria determined by plate cultures. After three minutes, 1 c.c. of crushed liver pulp contained 12,000,000 bacilli; after fourteen minutes, 6,000,000; after one hour, 700,000; after two hours, 80,000, and after three hours, 1,000. Films prepared from liver, spleen and lungs showed that bacilli were in large part agglutinated into clumps which were surrounded by polymorphonuclear leukocytes. The largest number of leukocytes enclosing clumps of bacilli was found in the organs of animals removed from thirty to ninety minutes after inoculation. After three hours, bacteria within leukocytes had undergone disintegration into granules or had lost completely the power of staining, but even after three hours some unagglutinated bacilli with staining properties unimpaired were found outside of cells.

Fine particles of inorganic material injected into the circulating blood, as the foregoing discussion has shown, tend to accumulate in the liver; but, according to Drinker, Shaw and Drinker, the cat is an exception to this statement, for its lungs in the period immediately after injection contain more manganese than the liver or spleen, but later give it up. Hopkins and Parker[24] made somewhat similar observations when they injected hemolytic streptococci into cats and rabbits. In cats, immediately after injection, bacteria were more numerous in a given weight (0.1 gm.) of lung than of liver or spleen, but in rabbits streptococci were much more numerous in liver and in spleen. Incubated lung and liver exerted a bactericidal effect on the streptococci that they contained, whereas spleen exhibited less bactericidal activity, but in other tissues multiplication of streptococci proceeded uninterruptedly.

There are a number of observations which show that immunization modifies profoundly the ability of tissues to fix bacteria. Since the liver is predominantly concerned in the removal of bacteria from the circulating blood, it is desirable to consider the effect of immunization on this function of the organ. Experiments have shown that certain antibodies act more effectively within the liver than in other tissues.

When rabbits received into the ear vein a large fatal dose of pneumococci, Bull[25] found that the resulting bacteremia persisted until death; but if antipneumococcus serum was injected, bacteria disappeared from the blood within fifteen minutes. Stained preparations made with blood removed from the heart before injection of the serum showed that the micro-organisms were discretely scattered in the film, whereas one minute after injection they were collected into clumps. These clumps were evidently removed by the liver, spleen and lungs, for clumps of diplococci were found in these organs. Little if any phagocytosis occurred within the circulating blood, but leukocytes in considerable number accumulated about the clumps held within the organs named.

Agglutination, however, is not essential to the fixation of bacteria by tissues of the immunized animal, according to Kitawaga.[26] He injected highly virulent pneumococci practically inagglutinable in the serum of an immunized rabbit and inagglutinable in the blood stream as well. These pneumococci injected into the venous system of normal rabbits persisted undiminished, but disappeared promptly when serum from an immunized rabbit was injected intravenously. He reaches the conclusion that some factor other than agglutination is responsible for the disappearance of these virulent pneumococci.

Ingenious experiments of Manwaring and Coe[27] have demonstrated that opsonins or bacteriotropic substances aid phagocytosis of bacteria by fixed cells of the liver. They washed all blood from the portal and hepatic veins by means of Ringer's solution, and then perfused the organ with pneumococci suspended in the same solution. Plate cultures showed that these bacteria passed through the organ undiminished, and addition of normal blood to the suspension caused no change; but the presence of a small amount of immune serum (1:1,000) caused complete retention of pneumococci. Addition of immune serum caused no removal of bacteria when suspensions were similarly passed through intestine, kidney, lungs or isolated hindquarters of the rabbit.

A measure of the capacity of different tissues to take up bacteria has been furnished by Manwaring and Fritschen.[28] They perfused organs of a dog with bacteria suspended in Ringer's solution, and determined by counting of colonies the number of bacteria removed from the suspension after it had been passed through an organ five times. What they call the microbic affinity of different tissues varies widely. Perfusion of a suspension of *Staphylococcus aureus* through the brain and meninges removed only 0.5 per cent. of the suspended bacteria; the intestine removed 4 per cent., and the isolated lung 6 per cent. The spleen, however, removed 60 per cent., and the liver, 80 per cent. The liver, on account of its large size and abundant blood supply, these observers believe, is the dominant factor in the removal of bacteria from the circulation. Its ability to fix different bacteria varies; it has a high affinity for *B. coli* (40 per cent. fixed after five passages) and for *Staphylococcus aureus* (80 per cent.), a low affinity for *B. bisepticus* (15 per cent.) and for

23. Bull, C. G.: J. Exper. Med. **22**: 475, 1915.
24. Hopkins, J. G., and Parker, J. T.: J. Exper. Med. **27**: 1 (Jan.) 1918.
25. Bull, C. G.: J. Exper. Med. **22**: 457, 1915.
26. Kitawaga, K. J.: Proc. Soc. Exper. Biol. & Med. **12**: 213, 1914.
27. Manwaring, W. H., and Coe, H. C.: J. Immunol. **1**: 401 (Aug.) 1916.
28. Manwaring, W. H., and Fritschen, W.: J. Immunol. **8**: 83 (March) 1923.

B. anthracis (25 per cent.), and is almost complete in ability to fix certain micro-organisms such as *B. lactis-aerogenes*. When blood serum from an immunized animal is added to a suspension of the corresponding bacterium, the ability of the liver to fix bacteria is greatly increased, so that micro-organisms which are fixed with difficulty, for example, *B. anthracis* or *B. lactis-aerogenes*, are now removed from the perfused suspension as readily as *B. coli* or *Staphylococcus aureus*. The amount of specific endothelial opsonin in the circulating blood determines the ability of the liver and to a less extent of the spleen to fix bacteria, but does not increase the affinity of other tissues for bacteria.

The foregoing observations have shown that the liver exerts the important function of removing bacteria from the blood stream. The organ is so situated in relation to the portal circulation that it can take up bacteria which under normal or pathologic conditions have penetrated the intestinal wall and thus prevent their entrance into the systemic circulation. It is significant that the activity of this function increases with immunization. The greater selective capacity of the liver tends to make it the final repository of micro-organisms that have temporarily lodged within vessels of the lungs or of other organs.

FOREIGN PROTEIN

The manifold capacity of the liver to remove injurious material from the circulating blood requires the consideration of its relation to foreign protein. Here again it doubtless serves as a buffer to protect the body from material that may find entrance by way of the gastro-intestinal tract.

There are observations which indicate that the liver modifies foreign protein introduced into the body and assists in its elimination. Chiray [29] found that egg white injected into the veins of rabbits appears in the urine after one-half hour, whereas its appearance is much later after injection into the mesenteric vein. In the dog, Langer,[30] found that egg white injected into a vein was demonstrable in the bile by means of the precipitin test after from one-half to one hour, and was still present twenty-four hours later.

In sensitized animals, the liver may modify the effect of the protein used to produce sensitization and may inhibit its toxic action. Falls [31] found that from 0.3 to 0.5 c.c. injected into the jugular vein of sensitized guinea-pigs caused death within from two to five minutes, whereas from 0.8 to 1.5 c.c. was required to produce death within from twenty to thirty minutes when injection was made into the mesenteric vein. Experiments of Manwaring and Crowe [32] indicate that the liver of a sensitized animal can destroy the toxicity of foreign protein. When a mixture of foreign protein used for the sensitization of guinea-pigs together with blood of a sensitized animal was transfused through the normal liver, the mixture retained its ability to produce an anaphylactic reaction; but when the same mixture was passed through the liver of a sensitized animal its power to cause anaphylaxis was lost.

These experiments suggest that the action of the liver on foreign protein is analogous to its action on bacteria, for in both instances the organ diminishes the injurious effect of the foreign substance, and in both instances their protective action is increased as the result of immunization. It is not improbable that the liver acts similarly on many injurious bacterial products which, like foreign protein, act as antigens and induce immunity.

29. Chiray: Thèse de Paris, 1906, quoted by Falls (Footnote 31).
30. Langer, J.: Ztschr. f. exper. Path. u. Therap. **3**: 691, 1906.
31. Falls, F. H.: J. Infect. Dis. **22**: 83 (Jan.) 1918.
32. Manwaring, W. H., and Crowe, H. E.: J. Immunol. **2**: 517 (Aug.) 1917.

CONCLUSIONS

The foregoing survey of the relation of the liver to intoxication and infection suggests the following statements:

The liver by means of the peculiar endothelium of its sinusoids fixes insoluble inorganic particles, many kinds of organic particles, such as bacteria and substances in colloid suspension, and perhaps by the same means many substances dissolved in the plasma.

With immunization, the liver shows increased ability to fix bacteria and foreign proteins and to render them harmless.

The liver removes from the portal blood many injurious agents which enter from the gastro-intestinal tract, and prevents their entrance into the systemic circulation.

Fixation of injurious substances may cause destructive changes in the liver and permanent lesions of the organ.

THE EVALUATION AND TREATMENT OF DISTURBED LIVER FUNCTION *

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In the present communication we outline some of the principal results of correlated studies on the functional state of the liver of the lower animals and of man. The studies include both means for ascertaining the state of liver function and means for influencing that state. In man the state of liver function was determined by estimating the concentrations of cholesterol, "bile acids," "total pigments" and "bilirubin" of duodenal contents. These contents were obtained both from normal controls and from patients with various diseases including lesions of the liver or its ducts. The studies on animals will be reported in detail at a later date.

It is well established that the liver performs a number of functions of foremost importance to the economy of the organism. It converts protein products absorbed from the intestines into urea. It detoxifies poisons that come to it from a variety of sources. It excretes cholesterol, calcium, pigments and other substances comprising the bile. It plays an important rôle in the metabolism of bile salts and bile pigments. As strange as it is true, little definite knowledge is available as to the state of the functions of the liver in even the most common pathologic conditions which affect that organ. Indeed, there is a paucity of methods which will give an adequate conception of the functional state of the liver of patients except at a time when that state is most seriously deranged. The development of more delicate methods would aid in explaining symptoms occurring during the course of diseases

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affecting the liver, and also might afford a means for detecting disturbances of the liver in their incipence. For these reasons we undertook the development of such methods.

One of the most promising means for obtaining information concerning an organ's functional condition is the study of that organ's secretions or excretions. An excretion of the liver, the bile, is poured into the intestines and may be obtained for study by means of the duodenal tube. However, the theoretical objection to such a study is that bile derived from the intestines may have lost its original character through possible action of the gallbladder. But this objection merely adds another phase to the investigation of duodenal bile. In making investigations on man it was found that the experiments could not always be sufficiently controlled to form a suitable basis for arriving at definite explanations for the phenomena observed. For this reason animal experimentation was entered on. The correlated results of these experiments with those on man have explained many of the indefinitely understood phenomena observed in man.

The study of the bile fraction of the duodenal contents of man may be divided into the following five stages:

1. The development of clinically applicable methods for examination of the bile fraction of duodenal contents.
2. Procedures for obtaining duodenal contents; this entails the development of means for stimulating uniformly the flow of bile in normal persons.
3. The establishment of the character of bile found in duodenal contents of normal persons.
4. Ascertaining the immediate source of bile found in duodenal contents.
5. Determining whether, regardless of the immediate source of the bile, the findings in the bile of duodenal contents of normal persons differ essentially from those of persons whose livers were demonstrably affected by disease.

The methods that have been devised represent procedures for estimating in conventional terms the concentrations of various constituents in the bile moiety of duodenal contents. To the present, methods have been developed that will determine the concentrations of cholesterol, bile acids, combined pigments and bilirubin of this bile fraction. All the methods are colorimetric. The cholesterol method [1] depends on the characteristic color developed by a chloroform solution of cholesterol when added to sulphuric acid and acetic anhydrid. The bile acid method [2] depends on the color produced by them in the presence of furfurol and sulphuric acid. A commercial preparation of glycocholic acid is used as a standard. The pigment concentration method [3] is the most simple of all. It consists of mixing duodenal contents with sodium sulphite and acetic acid, filtering and reading against a standard of a solution of chromates, expressing relative concentrations in conventional terms. The bilirubin method [2] is a modification of Ehrlich's diazoreaction, using a commercial preparation of bilirubin as a standard. The indexes of concentration of bilirubin and cholesterol are expressed in milligrams per hundred cubic centimeters of duodenal contents. Pigment and bile acid concentrations are expressed in percentage of arbitrary standard found to approximate the normal. Whether the methods proposed determine only the substances named is open to grave doubt. This is because the chemistry of these substances is highly complex and but little understood. But the methods do permit the determination of four substances persistently present in normal bile and with uniformly reliable results. The methods, therefore, afford a means of ascertaining the normal concentrations of these various constituents. They further give means for determining the influence on such concentrations of diseases affecting the liver; and by comparing the latter with the normal criteria, the functional condition of that organ can be estimated.

The method for stimulating the flow of bile is of foremost importance to the success of liver functional studies as reported here. Obviously, a substance must be used that will invariably stimulate the liver of normal persons to excrete bile. If the substance does not always stimulate the liver, it will be difficult to differentiate between the nonstimulation due to disease and that due to the failure of the substance employed. The pioneer studies [3] of the investigation reported here were carried out on duodenal contents obtained after the introduction of magnesium sulphate solution into the intestines. The use of this drug indicated the results which this method for establishing the functional state of the liver could give. However, it was found that magnesium sulphate [3] and other inorganic salts do not invariably stimulate the flow of bile in normal persons. The variability of the stimulating effect of magnesium sulphate may be explained on the basis of the results of animal experimentation. These results show that by varying the size of the dosage of magnesium sulphate, introduced either into the duodenum or into the blood stream, the excretion of bile by the liver may be increased or decreased; i. e., the biliary function of the liver may be stimulated or depressed. These findings indicate that the biliary function of the liver presumably was depressed in those normal persons in whom the use of magnesium sulphate failed to produce a flow of bile.

The occasional unsatisfactory effect of magnesium sulphate led to the use of various foodstuffs or their digestion products as stimulants to the flow of bile; and it was found that in proper amounts these would always produce stimulation of the biliary function of the liver of normal persons. Oleic acid was selected for use in the present investigation because it invariably produces a flow of concentrated bile in animals and normal persons; it is, also, nontoxic and cheap, and a good preparation is easily obtainable on the market. Furthermore, experimental work on animals shows that oleic acid is a very powerful stimulant to the biliary function of the liver. Large amounts of oleic acid do not depress the activity of this function, while other food products may cause depression. When oleic acid is used, the procedure for collecting duodenal contents from the human subject is as follows: The duodenal tube is swallowed before breakfast on an empty stomach; the metal tip is allowed to pass into the second portion, as determined by fluoroscopy. The subject then reclines on the right side and a mixture of 5 c.c. of oleic acid and 45 c.c. of tap water is introduced into the duodenum through the tube. After about fifteen minutes has elapsed, collection of duodenal contents is commenced by siphonage. As soon as bile appears, the collecting flask is changed and collection carried out for a period of thirty minutes, provided there is no gross change in the color of the bile; as for instance, from pale yellow to dark brown or deep green. If a marked change in color does occur, the collecting flask

1. McClure, C. W., and Vance, E.: Boston M. & S. J. **191**: 765 (Oct. 23) 1924.
2. Unpublished observations.
3. McClure, C. W.; Vance, E., and Green, M. C.: Boston M. & S. J. **192**: 431 (March 5) 1925. McClure, C. W., and Vance, E.: Ibid. **192**: 433 (March 5) 1925.

is again renewed and the duodenal contents collected over a period of the ensuing thirty minutes.

Observations on normal subjects and patients without demonstrable hepatic lesions showed that introducing oleic acid into the duodenum always gave rise to a flow of definitely brown bile. The minimum and maximum concentrations of the four constituents of this bile, as determined by the methods outlined, are as follows:

Cholesterol concentration from 30 to 213 mg.
Pigment concentration from 100 to 500 per cent.
Bile acid concentration from 80 to 212 per cent.
Bilirubin concentration from 6.7 to 23.5 mg.

These figures are fully comparable to those obtained in the duodenal contents of normal subjects in whom magnesium sulphate stimulated a flow of bile.[4] On a basis of these observations it is considered that the figures given for the four biliary constituents establish the limits of their normal variation.

During studies on normal and pathologic duodenal contents of man, data have been obtained which throw light on the immediate source of the bile fraction. It is important to know whether the bile to be examined has come directly from the liver; as bile which has passed through the gallbladder may be greatly modified from that derived directly from the liver. For this reason, the immediate origin of duodenal bile will be discussed.

It is well established that, in the presence of chronic cholecystitis, the bile of duodenal contents is often pale yellow. This color has been commonly regarded as indicative of the presence of bile that has come from the liver directly, and without having been subject to the modifying influences of the gallbladder, its presence leads to the assumption that the cystic duct is occluded and that the gallbladder does not function. Our studies show that by certain therapeutic measures the pale yellow bile may eventually be changed to a dark brownish color. One of the measures used to develop this change was duodenal lavage with magnesium sulphate solution. It does not seem probable that this would open the occluded cystic duct, especially if the occlusion were a stone. After repeated lavages, one or more of the solid constituents of the bile, which were normally low at first, often increased to normal amounts before the change from yellow to brown occurred. The same phenomenon was observed in the duodenal contents of patients whose gallbladders had been removed. Furthermore, in a certain stage of convalescence from catarrhal (infectious) jaundice, and during the same period of collection, duodenal contents may change from a golden yellow to deep grass green, and vice versa several times. Deep sage green bile of duodenal contents was obtained from a patient with a marked degree of pigmentation due to chronic hemolytic jaundice, and brick red bile from another such patient.

There is no known basis for explaining these color variations as the result of changing conditions in either the gallbladder or the duodenum, while it is well established that the liver can secrete biles of different colors. Furthermore, deep grass green duodenal contents have been obtained repeatedly from patients whose gallbladders have been removed. On the other hand, it may be maintained that the color variations noted were the result of exposing bile to the air. If this were true, then, the bile pigment present reacted entirely differently from that of normal persons. Color changes in the duodenal contents of normal persons occurred, if at all, only after a number of hours, when the specimens were not exposed to bright light or to bacterial action. Bile of normal character, as determined by the tests employed, has been obtained from patients whose gallbladders were completely excised. The most plausible explanation for these findings is obviously that the bile of duodenal contents comes directly from the liver under the conditions of experiment. For this reason, duodenal contents offer a direct means of examining secretions from the liver. This conclusion is supported by animal experimentation. In animals it has been found that oleic acid and the proper amount of magnesium sulphate solution introduced into the portal circulation actively stimulate the flow of bile even after ligation of the cystic duct.[2] Furthermore, Crohn[5] showed that an animal's gallbladder during digestion does not alternately empty and refill, and that when emptied, the gallbladder refills only very slowly and at irregular intervals.

TABLE 1.—*Character and Analyses of the Biles of Duodenal Contents Obtained from Normal Persons and Patients*

Case	Cholesterol, Mg. per 100 C.c. of Duodenal Contents	Pigment Concentration, per Cent.	Bile Acid Concentration, per Cent.	Bilirubin, Mg. per 100 C.c. of Duodenal Contents	Color	Diagnosis
	30	100	80	6.7	Brown	Normal minimum limits
1	16	42	42	0.0	Pale yellow	Cirrhosis of liver; no jaundice *
2	Trace	150	21	Trace	Dark green	Hepatic fever after excision of gallbladder *
3	Trace	37	Trace	Trace	Pale yellow	Acute cholecystitis; no jaundice *
4	12	114	30	Trace	Pale yellow	Chronic cholecystitis; calculi; no jaundice*
5	Trace	50	30	4.2	Brownish yellow	Cirrhosis of Banti's disease; no jaundice*
6	55	1,650	..	39.0	Reddish purple	Chronic hemolytic jaundice; icterie*
7	24	40	0	0.0	Pale yellow	Vascular hypertension with dyspepsia
8	17	102	74	1.8	Brownish yellow	Chronic headache (positive skin reaction to lactalbumin)
9	44	67	90	1.9	Yellow	Nausea, vomiting (no lesions found during exploratory laparotomy)

* Diagnosis confirmed on laparotomy.

The first clinical studies by the methods mentioned were carried out on patients with cirrhosis of the liver, in whom the condition varied from that which was well marked to that of apparently mild degree. The great majority of these patients were not jaundiced. The biliary fraction of duodenal contents from these patients was found to vary widely from that obtained from normal persons, which is illustrated by the findings in Case 2 of Table 1. These findings were accepted as fully demonstrating that the procedures used would show disturbances in hepatic function; regardless of whether the bile examined had or had not been modified by action of the gallbladder. Since the procedures showed disturbances in the mild grades of cirrhosis, it was considered that they furnished fairly delicate tests for determining the state of hepatic function. The status of the procedures having been established, they were next applied to the study of the liver functional condition of patients with various diseases. As a result, it was found that disturbances in

4. Unpublished observations. McClure, Vance and Green (Footnote 3).

5. Auster, L. S., and Crohn, B. B.: Am. J. M. Sc. **164**: 345 (Sept.) 1922.

the functional state of the liver accompanied lesions affecting its parenchyma, such as cancer, and derangements of its circulation, such as passive congestion. It was also found that acute and chronic cholecystitis were accompanied by disturbed liver function. In addition, disturbances in hepatic function have been found in patients presenting gastro-intestinal symptoms and in whom there are few or no signs of organic disease of either the liver, its duct, or the gallbladder. Some of these patients had been subjected to exploratory laparotomy and no intra-abdominal lesions were demonstrated. The symptomatology of these patients will be made the subject of a future communication.

The establishment of procedures for ascertaining the state of hepatic function afforded an objective means for ascertaining whether or not this state could be influenced by therapeutic measures. One of the measures studied was the introduction of magnesium sulphate solution into the duodenum in the manner proposed by Lyon.[6] For the purposes of this study, patients with cirrhosis of the liver or with gallbladder disease were given duodenal lavage with magnesium sulphate solution once or twice a week, while coincidently the state of hepatic function and the patient's clinical condition were also determined. It was found that this method of treatment was accompanied by decidedly favorable changes in the functional state of the liver in more than half the patients. Coincident with these changes, improvement in the patient's clinical condition occurred. Such findings are well illustrated in the protocol of a representative case outlined in Table 2. The patient was given duodenal lavage with magnesium sulphate solution once a week.

TABLE 2.—*Effect of Intraduodenal Magnesium Sulphate Therapy on Disturbed Liver Function of a Patient with Hepatic Fever* *

Date	Cholesterol, Mg. per 100 C.c. of Duodenal Contents	Pigment Concentration, per Cent.	Bile Acid Concentration, per Cent.	Bilirubin, Mg. per 100 C.c. of Duodenal Contents	Color	Symptoms
11/15	..	...	..	...	Pale yellow	Chills and fever
11/22	Trace	...	..	...	Light brown	Chills and fever, jaundice
11/29	..	...	..	...	.....	Chills and jaundice
12/ 6	..	...	..	...	.....	No jaundice
12/13	Trace	73	..	...	Light brown	One slight chill
12/27	..	...	..	...	Yellow green	Dyspepsia; chills
1/ 5	Trace	150	21	Trace	Dark green	No chill; dyspepsia
1/10	Trace	80	24	...	Green	Less dyspepsia
1/15	..	...	..	...	Greenish yellow	Some dyspepsia
1/24	Trace	75	28	0.0	Greenish yellow	Epigastric pains
1/31	..	...	..	...	Greenish yellow	No pain; dyspepsia
2/14	16.2	92	..	0.0	Pale yellow	Some dyspepsia
2/21	17.8	60	78	5.0	Brown	No symptoms
2/28	17.2	72	76	6.2	Brown	No symptoms
3/ 7	22.2	100	49	6.4	Brown	No symptoms
4/ 4	25	110	62	7.2	Brown	No symptoms
5/29	No symptoms up to date. Has gained from 125 to 142 pounds (from 56 to 64 kg.). Is back to full time work.					

* The patient, a man, aged 70, had had the gallbladder, with stones, excised three years before examination. Two years before he had had an attack of severe epigastric pain with chills, fever and sweats. For the past eighteen months he had had chills and fever, at first every few months, and for the past few months every week and later nearly every day, but no pain. Persistent dyspepsia was marked.

6. Lyon, B. B. V.: Diagnosis and Treatment of Disease of Gallbladder and Biliary Ducts, J. A. M. A. 73:980 (Sept. 27) 1919.

At the beginning of treatment of the patient represented in Table 2, the state of liver function was much disturbed, and clinical symptoms were marked. It will be observed that liver function ultimately became greatly improved and that the patient returned to a normal state of well-being. This coincidence of improvement in liver function and in clinical symptoms can be obtained in a fair percentage of patients. Such results indicate very strongly that magnesium can influence the functional state of the liver. The findings indicate also that improvement in hepatic function is the cause of clinical improvement. These conclusions find some support in the fact that animal experimentation shows definitely that magnesium can stimulate the liver to functional activity.

In contradistinction to the favorable findings discussed above, it was observed that in some patients liver function was apparently depressed by the introduction of magnesium sulphate solution into the duodenum. Such observations were not properly interpreted until experimental work on animals showed that improper amounts of magnesium sulphate will markedly depress the functional activity of the liver. On the basis of these observations, the depression of liver function in certain of the patients would seem to have been the result of improper dosage with magnesium sulphate. In some of these patients, changing the dosage was accompanied by improvement in the function state of the liver. These findings suggest that magnesium sulphate should be used with some degree of caution. However, at present the proper dosage can be determined by observing the effects of the drug on the functional state of the liver. Unfortunately, this tends to limit the usefulness of an apparently efficient therapeutic measure to those physicians who possess the special equipment necessary to determine the functional activity of the liver.

SUMMARY

Procedures have been devised for estimating the functional condition of the liver. These procedures consist of stimulating the liver with oleic acid and then obtaining the resultant bile from the duodenum by means of a tube. This bile is inspected for its color and analyzed for the concentrations of four of its constituents, which for purposes of description are called bilirubin, total pigments, bile acids and cholesterol. Neither the indefiniteness of the chemistry of these constituents nor the immediate origin of duodenal bile is of great moment as regards the clinical value of the findings. However, results obtained show that duodenal bile has suffered little, if any, modification by action of the gallbladder, and that the analytic methods are uniformly reliable.

The results obtained show definitely that magnesium sulphate has a pronounced effect on the functional activity of the liver in man and animals. This drug will either increase or depress that activity, depending on the amount reaching the liver. Further, the results indicate that the drug can modify favorably a functional state of the liver which has been deranged by disease, and that the favorable modification produces amelioration of clinical symptoms. For this reason, its use under properly controlled conditions is considered to be an efficient therapeutic measure. Unfortunately, the use of the procedures either for determining the state of liver function or for the therapeutic use of magnesium sulphate requires a considerable amount of experience in order to obtain good results.

THE THERAPEUTIC VALUE OF NON-SURGICAL DRAINAGE OF THE BILIARY TRACT *

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During the past decade, a number of noteworthy contributions have furthered the earlier recognition and more rational treatment of certain diseases involving the liver, gallbladder, gall ducts, pancreas and duodenum. Our knowledge of the physiology of the liver, gallbladder and pancreas is becoming more exact, although much remains mazed in speculation.

In this paper we aim to emphasize the fact that disease of the gall tract is a manifold and composite disease in which many organs are intimately or remotely involved. For many years, too great emphasis has been laid on the gallbladder as the chief offender. Until recently, we have not clearly enough recognized the concurrent infection and degenerative changes in the liver, bile ducts, pancreas and intestines which often play a prominent rôle in gall tract disease and produce a widely varying digestive complex.

Fig. 1.—Lymphatics of the liver and gallbladder, posterior view; first vicious circle in gall tract disease.

To understand the protean nature of gall tract disease, it is important not only to recognize the close anatomic contacts that exist between the stomach, duodenum, pancreas, liver, gallbladder, gall ducts and certain portions of the colon, but also to realize the intimate interrelationship for producing or transplanting disease that exists between these organs because of their blood, lymph and nerve supply. The spleen, likewise, must be considered in connection with the portal system.

Careful students of this subject will do well to follow closely the recent contributions of Graham, Heyd, Rous and McMaster, Mann, Rosenow, Whipple, Boyd, Aschoff, Westphal, Pribram, Chiray, Matsuo and others.

Eight years ago, the procedure now known as non-surgical drainage of the biliary tract was introduced. It was found that a more careful plan of examination of the mixture of fluids recovered (liver, pancreatic and gastroduodenal juices) by gross inspection, but more importantly by proper microscopic, chemical and bacteriologic study, supplied evidence, which, when added to the usual fundamental methods of diagnosis, served often to clarify an obscure diagnostic problem.

When the previously recommended technic [1] is carefully and intelligently carried out, it is of great diagnostic value, and will disclose during the second and third decades, many cases of early gall tract disease which ordinarily do not progress to the more definite clinical picture common to the fourth and following decades.

Van den Bergh's,[2] Fouchet's,[3] Meulengracht's [4] or Bernheim's [5] determination of bile pigment in the blood, and Rosenthal's [6] test for liver function are of differential diagnostic value in gall tract disease.

The roentgen ray, in expert hands, can furnish diagnostic evidence of great value, but when positive usually represents late pathologic changes.

Graham's [7] recently introduced method of cholecystography is a distinct advance in roentgen-ray diagnosis but it, too, gives far more definite evidence of an established pathologic condition of the gallbladder than it can furnish in the earlier breeding period of the disease; nor does it greatly inform us regarding disease of the ducts, and less of the liver.

This method, moreover, has some disadvantages still to be overcome. In addition to the sometimes severe reactions that followed intravenous use of sodium or calcium phenoltetrabromphthalein, now lessened by using the iodin halogen,[8] recently appearing experimental studies [9] have indicated a potential or actual damage to liver cells and tissue in addition to a local phlebitis, which has followed the intravenous use of various dyes.[10]

DIFFICULTIES IN DIAGNOSIS

Acute intra-abdominal disease, although often requiring astute differential diagnosis, in no sense offers the diagnostic problem common to chronic gastro-intestinal disease. In acute disease the intra-abdominal crisis often concerns predominantly one organ; in chronic gastro-intestinal disease there is rarely ever a distinct clinical symptomatology involving one organ alone.

* Read before the joint meeting of the Section on Pathology and Physiology and the Section on Gastro-Enterology and Proctology at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

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2. Van den Bergh and Snapper: Berl. klin. Wchnschr. **42**: 1081, 1915. Van den Bergh: Presse méd. **29**: 441 (June 4) 1921.
3. Fouchet, A.: Compt. rend. Soc. de biol. **80**: 826, 1917.
4. Meulengracht, E.: Deutsch. Arch. f. klin. Med. **132**: 285 (July) 1920.
5. Bernheim, Alice R.: Icterus Index (a Quantitative Estimation of Bilirubinemia), J. A. M. A. **82**: 291 (Jan. 26) 1924.
6. Rosenthal, S. M.: J. Pharmacol. & Exper. Therap. **19**: 385 (June) 1922; Phenoltetrachlorphthalein Test for Hepatic Function, J. A. M. A. **83**: 1049 (Oct. 4) 1924.
7. Graham, E. A., and Cole, W. H.: Roentgenologic Examination of Gallbladder: New Method Utilizing Intravenous Injection of Tetrabromphenolphthalein, J. A. M. A. **82**: 613 (Feb. 23) 1924.
8. Graham, E. A.; Cole, W. H., and Copher, G. H.: Cholecystography, J. A. M. A. **84**: 1175 (April 18) 1925.
9. Ottenberg, Reuben; and Abramson, H. A.: Production of Liver Necrosis by Tetrachlorphenolphthalein and Tetrabromphenolphthalein, J. A. M. A. **84**: 800 (March 14) 1925.
10. Through the courtesy of Dr. H. R. Hartman of the Mayo Clinic, we have learned that the oral administration of tetrabromphenolphthalein gives as satisfactory shadows of the gallbladder with negligible reactions. He believes that the dosage used, from 5 to 7 gm. in formaldehyd hardened capsules, is far in excess of the amount required.

A careful diagnostic survey will usually disclose multiple and interlocking disease of mouth and appendages, stomach, duodenum, gall tract, pancreas and intestine. Often disease or disorder of the nervous system, or of the cardiovascular-splenic-renal systems, or a disturbance in metabolism or endocrines will play a part either as contributing factors to or sequelae of chronic gastro-intestinal disease. Focal infection in tonsils, teeth, sinuses, lungs or bronchi, gallbladder, appendix, colon, prostate and pelvic organs, less frequently acute infectious disease flooding the circulation with bacteria, often initiate such chronic disease.

TOTAL DIAGNOSIS

Therefore, total diagnosis of chronic gall tract and associated disease, especially during the breeding period, is based on complete and methodical history and physical examination. This, when properly carried out and competently analyzed, furnishes a provisional diagnosis based on previous experience in clinical medicine. Sometimes, however, this is unreliable, and always incomplete.

Final diagnosis must be developed and proved by: (*a*) fractional gastroduodenal study; (*b*) biliary-pancreatic tract drainage study; (*c*) cardiac, hepatic, pancreatic, renal function tests; (*d*) intestinal motor function test to carmin, or to barium progress meal; (*e*) routine but complete study of feces, urine, blood, and less often sputum and saliva; (*f*) blood chemistry and serology; (*g*) general bacteriology, less frequently transplanted through animals; (*h*) expert roentgen-ray study; (*i*) various special tests; (*j*) in the very occasional case, operative exploration, which may become necessary to establish final accuracy of diagnosis.

DIAGNOSTIC BILIARY DRAINAGE

Nonsurgical biliary drainage, in its diagnostic conception, was based on Meltzer's "law of contrary innervation."[11] As applied to the biliary tract, this law of Meltzer's has been repeatedly challenged because many experimental physiologists cannot demonstrate its validity or even agree in their findings. We have elsewhere pointed out certain sources of error that must be overcome.

We believe that this law is fundamentally correct because of the accumulated clinical and laboratory evidence from more than 14,000 drainages. Furthermore, we have the testimony of Sachs[12] of Nebraska, Pribram[13] of Austria and Matsuo[14] of Japan that they have visualized the gallbladder expelling its contents as a result of intraduodenal stimulation with magnesium sulphate and peptone. And again, we have proof of the gallbladder emptying tetrabromphenolphthalein, using Graham's method, coupled with intraduodenal magnesium sulphate, as shown by D. N. Silverman,[15] C. R. Comstock,[16] H. M. Eberhard[16] and others.

TRANSITION FROM DIAGNOSTIC TO THERAPEUTIC PROCEDURE

Following the performance of repeated diagnostic drainages on the first groups of patients we studied, we were impressed by the striking clinical improvement, both subjective and objective, that often took place. This gave rise to the hope that in properly selected cases of gall tract disease, something definite might be accomplished therapeutically if a systematic course of frequent drainages could be given.

Experience proved that the response of many patients was most gratifying to drainage alone, although critics queerly asserted that much of this was due to a psychic reaction, ignoring the significance of the positive objective findings drained out in the bile and the various laboratory control checks. Gradually a more common sense combination of many nonsurgical measures was added with increasing success. Reports of series of such cases so treated have been published.[17]

The successful crux of the therapeutic problem lies in the proper selection (after thorough study) of patients in various stages of gall tract and associated disease, for whom appropriate surgical, nonsurgical or combination methods are adapted.

Upper right quadrant surgery is the most difficult abdominal zone to work in and requires experience, expert technic and sound surgical judgment.

Recent attention was directed to this aspect of the subject in a review[18] of a series of our cases in which operations were performed by first class surgeons in which the immediate mortality was 10 per cent. and there were serious hospital complications in 33 per cent. Even cursory examination of many protocols of multiple or even primary operations vividly shows that it is not merely a surgical "feather in the cap" whether or not the patient escapes a hospital death. Rather, does he recover a reasonably normal state of health? End-results and not surgical technic should be the criterion.

THREE VICIOUS CIRCLES IN CHRONIC GALL TRACT DISEASE

A close study of the factors concerned in the continued or relapsing ill health of the victim of chronic gall tract disease will show that there are three vicious circles at work.

The first is concerned with the lymphatic drainage between the gallbladder, liver and pancreas. If there exists a mural or interstitial cholecystitis of bacterial nature, the gallbladder becomes a genuine focus of infection and the lymphatic distribution reroutes the infection to the liver and pancreas and back again to the gallbladder. Such gallbladders will fail to be relieved permanently by nonsurgical drainage, and tend to relapse. The only way to break this first vicious circle definitely is to remove the gallbladder (Fig. 1).

Occasionally the focal mural infection may die out or become attenuated after connective tissue overgrowth has become excessive; but by this time the function of the gallbladder has usually been destroyed, and the end-result is much the same and warrants cholecystectomy.

From 70 to 85 per cent. of such gallbladders when removed early, without injury to ducts or without peritoneal soiling, will insure satisfactory recoveries which redound to the credit of surgery—the percentage of restoration to health being in direct ratio to the skill and technic of the surgeon who pays attention to reducing surgical trauma to liver, intestine, and the blood and nerve supply.

11. Meltzer, S. J.: Am. J. M. Sc. **153**: 469 (April) 1917.
12. Sachs, Adolph: Nebraska M. J. **6**: 225 (Aug.) 1921.
13. Pribram, E. E.: Klin. Wchnschr. **2**: 1590 (Aug. 20) 1923.
14. Matsuo, Iwao: Magnesium Sulphate as Cause of Evacuation of Gallbladder, J. A. M. A. **83**: 1289 (Oct. 25) 1924.
15. Silverman, D. N., and Menville, L. J.: Observations of Visualized Gallbladder by Graham Method, J. A. M. A. **84**: 416 (Feb. 7) 1925.
16. Personal communication to the authors.
17. Lyon, B. B. V.: Am. J. M. Sc. **159**: 503 (April) 1920; **162**: 60 (Jan.) 1922; **162**: 223 (Feb.) 1922; Pennsylvania M. J. **25**: 392 (March) 1922; M. Clin. N. Am. **5**: 803 (Nov.) 1924; Therap. Gaz., November-December, 1924; Non-Surgical Drainage of the Gall Tract, Philadelphia, Lea & Febiger, 1923.
18. Lyon, B. B. V.: Therap. Gaz., November-December, 1924.

Still too high a percentage of all cases relapse, most frequently when surgery is poor, but not infrequently despite the most skilful surgery. Seeking a reason for this, the commonest cause lies in a preexistent hepatitis which often creates a residual infection and catarrh in extrahepatic ducts (if not already infected), as pointed out particularly by Graham [19] and by Heyd,[20] and produces a relapsing cholangeitis heretofore often requiring secondary surgery.

In such cases, the liver, ducts and intestinal tract become the chief focal points of infection, and in them the second and third vicious circles become predominant.

The liver or ducts, or more commonly both, continue to carry the infected and poisoned bile into the duodenum and down through the intestine to exit in the feces. This disseminates the infection throughout the intestines until they, in turn, often develop mural as well as mucosal disease.

This second vicious circle, therefore, consists in reabsorption of bacteria or toxic substances in the bile by way of mesenteric veins, emptying into the portal vein, thence back to and through the liver, part of the toxic dose being shunted by the hepatic veins through the inferior vena cava into the right heart, but the larger part again reexcreted by the liver bile to be again reabsorbed in the intestine (Fig. 2).

The third vicious circle is similar, but represents that toxic portion of the bile picked up by the mesenteric lacteals, emptied into the receptaculum chyii, thence by way of the thoracic duct into the left innominate or left subclavian vein, finally to reach the heart. Once again this poisoned or impoverished blood is pumped out into the arterial circulation to exert a harmful effect on all tissues (Fig. 3).

Particularly important is that portion of total blood carried by the abdominal aorta to nourish the intra-abdominal viscera. After supplying the spleen, stomach, pancreas and intestines, the waste materials from such sources are in part again carried through their veins into the portal system and back to the overworked and functionally enfeebled liver cell to be reexcreted, and the vicious circle is renewed.

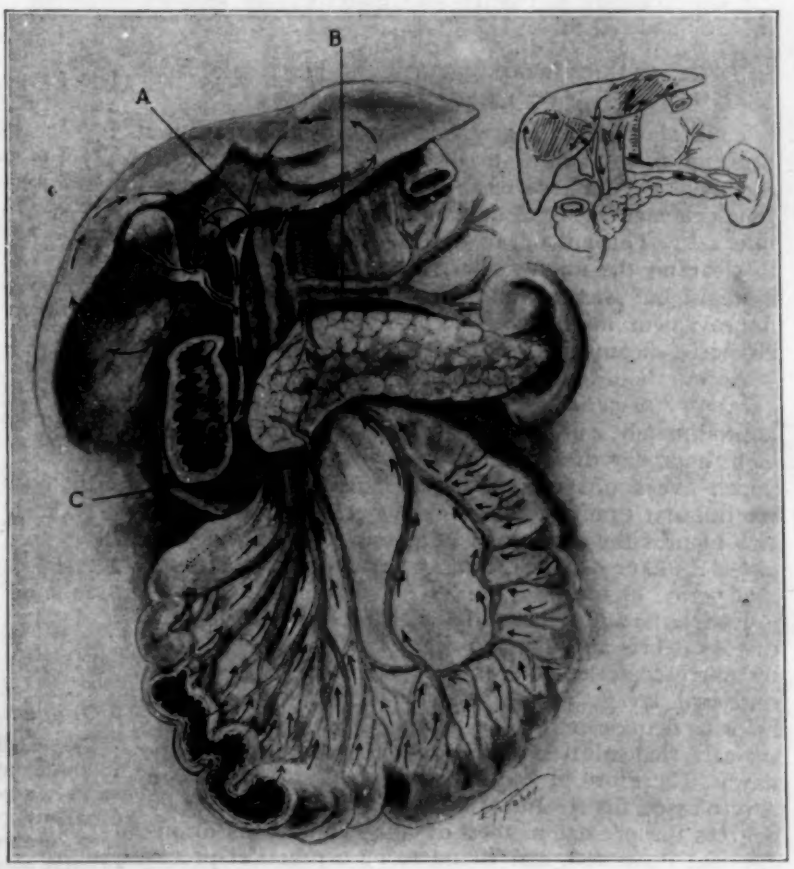

Fig. 2.—Second vicious circle (blood) in advanced gall tract disease: *A*, portal vein; *B*, splenic vein; *C*, mesenteric vein.

No wonder that the cardiac, renal, blood-vascular, neural and intestinal systems, in varying degrees in different cases, begin to groan with a wide variety of symptoms. The effect of the second and third vicious circles, especially in the visceroptotic patient, is clearly evident.

It is generally conceded that the liver has a wide margin of reserve, with great power of recuperation from direct and indirect insults. Nevertheless, the continued absorption of toxins devitalizes liver cells and in time seriously impairs or destroys their function and encourages degenerative tissue changes.

BREAKING THE VICIOUS CIRCLES

How, then, can the second and third vicious circles be broken? Obviously, each is beyond the scope of judicious surgery, which cannot remove the liver or ducts and have the patient survive, certainly not for long, as witness the recent experimental work of Mann.[21]

Herein lies the greatest value of nonsurgical drainage of the biliary system as a therapeutic agent. Previous surgical experience has shown that by removing from the body the quotient of recoverable toxic factors in the bile, the muscular irregularity of the heart disappeared, evidence of toxic irritation of the kidneys subsided, neural irritation (neuritis) quieted down and digestive function improved. In short, general symptomatic improvement was usually secured, but its duration was too often limited to the surgical drainage period; and relapse often occurred after sinus drainage was terminated, and the poisoned bile was again passed through the usual intestinal channels. Therefore, it appeared that simple removal of the bile from the body, plus the lesser element of bed rest, regulation of diet, etc., was the cause of much clinical improvement.

As knowledge of the first vicious circle became more widely appreciated the era of cholecystectomies

19. Graham, E. A.: Surg., Gynec. & Obst. **26**: 394 (April) 1918. Graham, E. A.; Peterman, M. G., and Priest, W. S., Jr.: Association of Hepatitis with Experimental Cholecystitis and Its Bearing on Pathogenesis of Cholecystitis in the Human, Arch. Surg. **2**: 92 (Jan.) 1921. Graham, E. A., and Peterman, M. G.: Further Observations on Lymphatic Origin of Cholecystitis, Choledochitis and Associated Pancreatitis, Arch. Surg. **4**: 23 (Jan.) 1922.

20. Heyd, C. G.; Killian, J. A., and MacNeal, W. J.: The Liver and Its Relation to Chronic Abdominal Infection, The Beaumont Foundation Lectures, St. Louis, C. V. Mosby Company, 1924.

21. Mann, F. C.: Am. J. M. Sc. **161**: 37 (Jan.) 1921. Mann, F. C., and Magath, T. B.: Am. J. Physiol. **55**: 285, 1921; Tr. Sect. Path. & Physiol., 1921, p. 29; Studies on Physiology of Liver, Arch. Int. Med. **30**: 171 (Aug.) 1922; **31**: 797 (June) 1923. Williamson, C. S., and Mann, F. C.: Am. J. Physiol. **65**: 267 (July) 1923.

began, with increased success in the hands of first class surgeons. Nevertheless, relapses still occurred, as a result of the activity of the second and third vicious circles, factors in chronic gall tract disease not clearly enough appreciated.

Our experience indicates that the evil effects of this can be controlled and often eradicated by nonsurgical drainage, vaccine therapy and total management by methods already reported.

Maximum drainage of the liver and ducts can be secured by the duodenal tube. A study of many bedside notes and surgical reports of the amount of bile drainage recovered by glass or rubber intubation of common or hepatic ducts averaged not quite 500 c.c. in twenty-four hours (except in jaundiced cases due to common duct obstruction), whereas an average of 1,500 c.c. bile drainage in twenty-four hours can be secured by the duodenal tube.

INTERMITTENT DRAINAGE VERSUS CONTINUOUS DRAINAGE

Until about three years ago, nonsurgical therapeutic drainage was confined to the use of the intermittent method. By that, we mean a four to eight hour daytime drainage repeated at daily, semiweekly or weekly intervals. This amount of drainage was often sufficient to clear up the mildly catarrhal or infected gall tract systems, but was not adequate in securing permanent improvement in the more severe grades of hepatitis, cirrhosis, cholangeitis and pancreatitis.

A four hour morning drainage will recover, on an average, 300 c.c. of mixed bile of which three quarters approximately will be "AC" (duct-liver) fraction. An eight hour day drainage will average about 600 c.c. of which five sixths represents "AC" fraction. If such intermittent drainages are carried out once a week for two months the amount of bile recovered will average either 2,400 or 4,800 c.c. removed from the body during that period of time.

Each drainage removes from the body much inflammatory débris and myriads of bacteria, as is evidenced by microscopic and cultural examination. The transduodenal lavage flushes out the intestinal tract and helps to detoxicate, but despite eight weekly drainages, the catarrhal gall tract fills up for fifty-two out of sixty days. Therefore, it became apparent that in the more severe cases, the treatment should be intensified, and by degrees the present method of more continuous drainage was instituted, and found to be a practical procedure contributing to final success. Continuous drainage will recover and remove from the body an average of from 3½ to 4 gallons (from 13,248 to 15,140 c.c.) of bile in three weeks' treatment. This thoroughly drains the liver, revitalizes its cells, flushes ducts, prevents clogging with mucus, inflammatory or infected débris, avoids secondary stasis and minimizes the possibility of secondary calculi. It likewise drains the pancreas, lightens its labors and lessens chemical and bacterial insults to duodenal mucosa.

CONTINUOUS DRAINAGE SCHEDULE

8 a. m. The mouth and stomach are prepared by thorough gargling and lavage.

8:30 to 12 m. Duodenal drainage, stimulating with magnesium sulphate, peptone, olive oil, dilute hydrochloric acid, physiologic sodium chlorid solution or hot water (depending on whether the gallbladder has been removed or on the individual drainage response to any of these solutions).

12 noon The tube is passed to a point 95 cm. from the teeth and the following duodenal feeding given:

		Calories
Milk (whole)	120 c.c. (4 oz.)	80
Cream	15 c.c. (½ oz.)	30
Yolk	1 egg	50
Lactose	15 gm. (4 tsp.)	60
Salt	1 pinch	..
		220

The food is predigested for ten minutes with peptonizing powder, put in a vacuum bottle at 105 F. and introduced slowly by the rectal drip method, not less than thirty minutes being taken for its introduction. If nausea is present the egg yolk is omitted, the rate of inflow slowed, or both.

The tube is clamped off for an additional half hour to permit this feeding to pass into the jejunum.

1 to 4 p. m. The tube is drawn up to 75 cm., marked and drained.

4 to 5 p. m. The duodenal feeding is repeated.

5 to 8 p. m. Bile drainage is resumed.

8 to 9 p. m. Duodenal feeding.

9 p. m. The tube is pulled up to 75 cm., marked and unclamped, and bile is drained into a gallon bottle throughout the night.

8 to 12 m. The following day, the patient is restimulated with magnesium sulphate, peptone solution, olive oil, hot water or physiologic sodium chlorid solution and biliary drainage is continued until noon. A transduodenal lavaging enema of 250 c.c. of Ringer's solution is given, or suitable disinfectants—silvol, neutral acriflavine, mercurochrome-220 soluble, etc.—are substituted, as previously recommended. The tube is removed.

12:30 p. m. A lunch of cereal, soft egg, toast, fruit juices or fruit.

3 p. m. Milk or crackers.

6:30 p. m. Dinner tray, either well balanced or low in animal protein and fat and high in carbohydrate, sugar, starch, as indicated by knowledge of the patient's gastric, duodenal, pancreatic and blood chemistry.

9:30 p. m. Milk and crackers.

That night, the patient sleeps without the tube, and the following morning the foregoing schedule is repeated and so on over a period of from two to four weeks, until from 3 to 6 gallons (from 11,355 to 22,710 c.c.) of bile mixture has been recovered, provided the daily microscopic and biweekly cultural objective evidence parallels clinical improvement.

During this period of intensive treatment, the patient should be suitably controlled by additional laboratory observations (blood counts, blood chemistry, urinalysis, quantitative urine output, etc.) and the usual careful bedside notes carried out by a nurse trained in the technic of this management.

SELECTION OF CASES FOR TREATMENT

Biliary tract drainage, when properly carried out, will be found to have great therapeutic value in the following groups:

1. Relapsing cholangeitis (particularly after a cholecystectomy has failed to relieve) can often be cured without resorting to secondary operations, provided there is no evidence of residual stone in the common or hepatic ducts.

2. In many cases of obstructive jaundice due to impacted or ball-valve common duct stone the foregoing plan, aided by morphin, has lessened inflammatory

edema and sphincter spasm and permitted the stone to bob back into the dilated common duct. Occasionally, it has been passed and recovered in the sieved stool. After drainage has been established, the jaundice rapidly clears and toxic myocarditis and nephritis subside, and thus safer surgery is permitted at an earlier period than under the older form of management.

3. When proper judgment is used in the selection of patients, many persons with quiescent cholelithiasis may be restored to satisfactory health. Some patients with restless cholelithiasis with inflamed mucous membrane of gallbladder and gall ducts may be relieved of their colics and brought to a state of quiescence, and necessary surgery can be carried out at the most suitable interval period, as in appendicitis, when the risk is less.

4. In many cases of gall tract disease, including quiescent cholelithiasis, in which, for some reason (particularly in those of advanced years) surgery cannot be undertaken, we have seen nonsurgical drainage substituted for surgery with most satisfactory results. When there are serious surgical contraindications in gallbladder disease requiring cholecystectomy, a week or two weeks of preoperative drainage, when practicable, serves to detoxicate the patient more rapidly, and permits earlier surgery with increased safety.

5. Postoperative persistent hiccup, and vomiting may be brilliantly checked sometimes after the first few hours of drainage, certainly after a day or two. A number of cases of epidemic hiccup have been promptly aborted. In most of these cases, a streptococcus has been isolated from the bile.

Postoperative adynamic ileus has been successfully combated by biliary drainage and duodenal lavage.

6. Some persistent biliary fistulas have been successfully closed by this form of drainage, with the aid of vaccines. Jaundice following arsphenamin treatment can be aborted.[22]

7. Simple catarrhal jaundice usually clears promptly in from two to seven days after the obstructive plugs of mucus are removed. This spares the liver and pancreatic cells many days of pressure damage.

8. Early gallbladder and gall duct catarrhs, with subinfection, and especially cystic duct obstruction due to catarrh, diagnosable only by medical drainage study, can often be permanently cleared up and later more serious pathologic conditions prevented. Cholecystitis as a complication of acute infectious fevers will often respond favorably. The objective drainage findings in many infectious fevers give evidence of the early mucosal damage to gallbladder and ducts, microscopically showing pronounced exfoliation of tall and short columnar gall tract epithelium.

9. This continuous method of drainage, modified slightly in diet, has been found an excellent plan of treatment for gall tract disease associated with duodenitis or the medical form of duodenal ulcer.

10. There is a large group of patients with hepatic-intestinal toxemia who give vague histories of atypical digestive symptoms, "dyspepsia," "nervous indigestion," and "biliousness," with anorexia, constipation, headache, nausea, belching, flatulence, dizziness or vertigo, and various skin changes—swarthiness, petechiae, "liver spots" or telangiectases—suggesting biliary or portal cirrhosis, but no definite evidence in physical examination, roentgen-ray studies or drainage findings to condemn the gallbladder or appendix. In many patients of this group, the gallbladder and appendix have already been removed. Medical biliary drainage and colonic irrigation will secure much better results than calomel or other drugs.

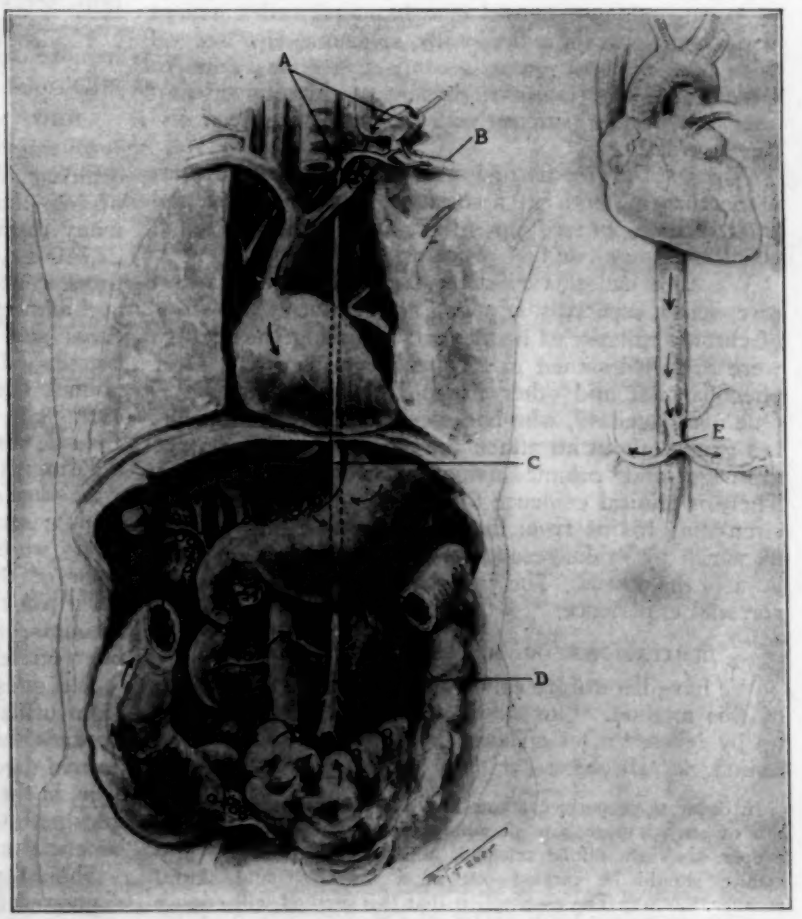

Fig. 3.—Third vicious circle (lymph) in advanced gall tract disease: *A*, innominate vein; *B*, subclavian vein; *C*, thoracic duct; *D*, receptaculum chyli; *E*, celiac axis.

11. Another large group suffers with severe sick headaches, often cyclic, suggesting biliary migraine. Many such patients can be completely relieved. It is important to exclude headaches due to eye strain, sinusitis, nephritis, arteriosclerosis, ovarian dysfunction and intracranial conditions which require different treatment. The use of erysipelas and prodigiosus toxins (Coley's serum) has been worth while in some unusually stubborn cases not responding to other measures.

12. Certain forms of asthma which do not type properly to allergy tests seem to be due to some toxic factor within the gastro-intestinal tract which responds favorably to this form of treatment.

13. In association with other measures, some cases of chronic neuritis and arthritis have been greatly improved, particularly joint cases in which there is

22. Wilhelm, L. F. X.: Duodenal Lavage in Treatment of Jaundice Complicating the Treatment for Syphilis, Arch. Dermat. & Syph. **10**: 499 (Oct.) 1924.

infection within the liver or intestine. All recognizable extra-abdominal foci should be removed, if possible.

14. In a group embracing typhoid carriers, flagellate or other parasitic infections involving biliary tract and upper intestines, this treatment will be found helpful. Giardiasis is especially stubborn and, in its tendency to relapse, suggests invasion of the gallbladder.[23]

15. Finally, there is a group embracing various problem diseases for some of which cases very distinct improvement has been secured. In cirrhosis of the liver, when detected in an early stage, often accidentally at the time of gall tract surgery, this treatment, when added to the orthodox plan of management offers some promise of forstalling the later more serious aspects of the disease.

Among others benefited may be mentioned a patient with hemolytic jaundice with splenomegaly, several with pernicious or grave secondary anemias (due to circulating liver toxins?), chronic pancreatitis or subfunction. Some patients with diabetes have been distinctly aided.

A case of erythema nodosum and a case of purpura hemorrhagica, both in association with manifest gall tract disease, cleared up satisfactorily, after diet and chemotherapy alone had previously failed.

We have had several cases of a nontraumatic form of epilepsy, especially in young adults, but in two cases of chronic epilepsy of many years' standing, the seizures were greatly lessened in frequency and severity, after phenobarbital and other drugs had failed to relieve. One man, aged 49, who had weekly convulsive attacks, has gone without an attack for more than a year since drainage and colonic irrigation were discontinued. There is clinical evidence to suggest that there may be circulating toxins from liver or intestines, the removal of which by drainage and irrigation prevents or ameliorates the attack. The foregoing group embraces our personal experience.

LIMITATIONS OF NONSURGICAL DRAINAGE

We have heretofore called attention to the limitations of this method. Our views have been aptly summed up by Niles,[24] after an experience of more than 3,000 drainages. He says:

> In order to properly evaluate any procedure, the therapeutic use of such a procedure should presuppose: First, that the proper cases should be selected, and secondly, that the procedure should be carried out in a thorough and skilful manner. . . . The assumption that this method will remove gallstones, will break up adhesions, will cure appendicitis, or cancer of the liver, or remove deep seated organic pathology of the gallbladder and duct, is ridiculous, and the patients should be plainly so informed. . . . Furthermore, no physician should use this method unless he goes into it wholeheartedly, performing it in a technically correct manner, and is willing to persevere in his efforts, regardless of either active opposition from many of his confrères, whose approbation he desires, or those who would "damn it with faint praise."
>
> While neither the principle nor practice of nonsurgical gall tract drainage is accepted by a multitude of conscientious physicians, on the other hand, a multitude who are employing it are getting satisfactory results.
>
> The writer wishes to express an earnest belief that this procedure will continue to enjoy a wider acceptance among the medical profession, as its real value is better understood, and its limitations more definitely fixed; and that it will eventually reach a proper and accepted place as a recognized therapeutic procedure.

23. Giardiasis, Frequency, Recognition, Treatment and Certain Clinical Factors, to be published.
24. Niles, G. M.: J. M. A. Georgia 13: 165 (April) 1924.

This summarizes the position which we have constantly maintained.

THE NECESSITY OF TOTAL MANAGEMENT IN GALL TRACT DISEASE

In association with the use of nonsurgical drainage as a preoperative and postoperative measure, total management of chronic gall tract disease should embrace a dietetic regimen of frequent small feedings with reduced fat and animal protein content, colonic irrigations when indicated and vaccine therapy. Chemical therapy by mouth should be prescribed only to correct known factors of abnormal gastroduodenal, pancreatic and biliary tract chemistry. Common sense efforts should be directed to restoration of normal bowel function, breaking the laxative habit—constipation vicious circle—and, finally, education of the patient to adjust his life so as to place the least strain on damaged organs.

HOW MUCH BILE DOES THE LIVER SECRETE?

During our experience with continuous therapeutic drainage, we were struck by the very large quantities of bile that can be recovered by duodenal tube. In many instances, from 3 to 6 gallons (from 11,355 to 22,710 c.c.) could be removed from the body in from three to four weeks' time. Depending on its viscosity and admixture with other fluids, such as gastric, duodenal and pancreatic juice, a gallon averages 7 or 8 pounds (3.2 or 3.6 kg.) in weight. From 35 to 40 pounds (from 16 to 18 kg.) of fluid weight have been extracted with inconspicuous loss of body weight. Indeed, certain patients show a gain in weight despite the diminished caloric intake.

In some cases, it would appear that the larger amount of bile secreted by the liver was removed since the stools were brought to an acholic state. In others, the color of the stools and the tests for the bile content indicated that, despite the withdrawal of these large amounts, it did not represent the recovery of the total bile secreted.

We question whether this large withdrawal of bile from utilization for digestive function could be practiced without unfavorable results in persons with normal digestion and no intra-abdominal disease. However, in the sick, especially those suffering from hepatic intestinal toxemia or advanced gall tract disease, the beneficial effect of such treatment is very striking.

Should we not recast some of our former views expressed in current textbooks in regard to how much bile the liver secretes? It has been generally stated to range between 1,000 and 1,500 c.c. in twenty-four hours. Our experience leads us to believe that these figures are much too low. Perhaps they could even safely be doubled. Admitting the fact that the fluids recovered from the duodenum represent a mixture of secretions from liver, pancreas, stomach and duodenum, which cannot be readily separated for individual analysis or weighing experiments, it would appear that by far the largest part represents liver secretion.

Case 1.—From a man with chronic cholecystodochitis and catarrhal cystic duct obstruction (but without jaundice), severe pain, depression and erythema nodosum, 16,960 c.c. (4½ gallons [17,033 c.c.] of bile mixture) weighing 35 pounds (16 kg.) was recovered in twenty days. The actual number of drainage hours was 147, representing 113 c.c. an hour, or 2,764 c.c. in twenty-four hours. The patient's weight on admission was 207 pounds (94 kg.), on discharge, 201 (91.2 kg.). There was entire symptomatic recovery over a period of one year.

CASE 2.—From a man, aged 32, with cirrhosis of the liver with subjaundice, two years after a cholecystectomy, 19,760 c.c. (5 gallons) of bile mixture weighing 40 pounds (18 kg.) was recovered in 133 drainage hours, over an eighteen day period, or at the rate of 141 c.c. an hour, or 3,384 c.c. for each twenty-four hours. His weight on admission was 121 pounds (54.9 kg.), on discharge, 123 (56 kg.). One year later, this patient remained greatly improved, was no longer jaundiced, and had gained 30 pounds (13.6 kg.).

In states of frank jaundice, the amount of bile recovery is much larger but this does not indicate increased secretion, as shown by Case 3.

CASE 3.—From a man, aged 50, with postoperative obstructive cholangeitis, 3,600 c.c. of bile was recovered in eighteen hours, or at the rate of 200 c.c. an hour, or 4,700 c.c. for each twenty-four hours.

CASE 4.—A man, aged 50, had had previous operations; a pyloroplasty, a cholecystostomy and an appendectomy in 1916, and, following a relapse, a cholecystectomy and a choledochostomy in 1917. Three weeks' surgical drainage recovered 1¾ gallons (6,624 c.c.) of bile. He was referred in 1922, seriously ill with relapsing cholangeitis with jaundice, Grade 4, pain, fever, sweats, leukocytosis and myocarditis. Continuous drainage for five days recovered 2½ gallons (9,463 c.c.) of bile. Microscopy revealed acute catarrhal inflammation and *Staphylococcus aureus* infection. Vaccine was given. Improvement followed. A lesser relapse occurred four months later, with jaundice and pain. Eighteen hours' duodenal drainage recovered 3,600 c.c. of bile. There was prompt improvement. Intermittent drainage was carried out for a year. No further relapses occurred, and in 1925 this patient remains in much better health.

We have noted that a proportionately larger amount of bile is often recovered during the night drainage hours, during the interdigestive phase, when the liver is not being stimulated by ingestion of food. Frequently, amounts ranging between 800 and 1,800 c.c. of bile mixture have been recovered from 9 p. m. until 9 a. m. An increased rate of liver secretion can be noted in certain cases following the introduction of a duodenal feeding, whereas in others this effect is not so marked.

Clinical observations on different patients, indicate that there is a distinct variability in the rate of bile secretion in individual livers. In some, it appears greatly accelerated; in others, definitely retarded. Most of our experimental observation has concerned persons who were sick. Not enough opportunity has developed for controls with so-called normals, because of the difficulty in securing normal persons who will undergo this form of clinical experimentation.

ILLUSTRATIVE CASE

The beneficial effect of biliary drainage on a laboring cardiorenal system clinically noted can often be substantiated by laboratory findings.

CASE 5.—A man, aged 52, had relapsing cholangeitis after a cholecystectomy for gallstones performed one year earlier. Pure cultures of *Bacillus typhosus* of the "carrier" type were revealed twenty-seven years after the primary infection. This patient, with damaged cardiovascular and renal systems, was seriously ill, jaundiced and in severe upper abdominal pain. Intermittent drainage, followed by continuous drainage, recovered 14,440 c.c. (3⅝ gallons) of very viscid liver bile, weighing 31½ pounds (14.3 kg.) after 124 drainage hours, with definite clinical improvement. The laboratory control is illustrated by the accompanying table.

*Laboratory Findings in Case 5**

Date	Weight, Pounds	Pulse Rate	Blood Pressure: Systolic	Blood Pressure: Diastolic	Total 24 Hour Urine, C.c.	Specific Gravity	Casts	Phenolsulphonephthalein Output, 2 Hour Intramuscular	Blood Chemistry, Mg. per 100 C.c.: Glucose	Uric Acid	Urea Nitrogen	Nonprotein Nitrogen	Creatinin	White Blood Cells	Hemoglobin (Dare)
2/23/25	163	90	152	100	.....	.....	.....	.....	...	....	....	....	....	.....	....
2/24/25	...	..	...	...	.....	1.025	Hyaline granular	19%	...	....	....	....	....	.....	....
2/25/25	...	..	...	...	550	.....	.....	.....	149	4.16	20.0	50.0	1.88	10,100	81%
2/26/25	...	80	160	100	.....	.....	.....	.....	...	....	....	....	....	.....	....
3/ 2/25	...	..	...	...	.....	1.025	.....	.....	...	....	....	....	....	.....	....
3/ 3/25	150	..	...	...	.....	.....	Hyaline granular	.....	...	....	....	....	....	.....	....
3/ 6/25	...	..	...	...	.....	1.014	None	27%	...	....	....	....	....	.....	....
3/ 8/25	...	78	147	98	.....	.....	None	.....	...	....	....	....	....	.....	....
3/10/25	...	..	...	...	.....	1.012	None	.....	...	....	....	....	....	.....	....
3/12/25	...	..	...	...	.....	1.015	None	.....	...	....	....	....	....	.....	....
3/13/25	...	..	...	...	.....	.....	None	.....	...	....	....	....	....	9,800	82%
3/15/25	154	..	...	...	.....	.....	None	.....	...	....	....	....	....	.....	....
3/16/25	...	..	...	...	2,400	.....	None	.....	...	....	....	....	....	.....	....
3/17/25	...	..	...	...	.....	1.015	None	.....	...	....	....	....	....	.....	....
3/20/25	...	..	...	...	.....	1.018	A few hyaline	.....	...	....	....	....	....	9,000	83%
3/21/25	156	68	140	84	.....	.....	.....	.....	...	....	....	....	....	.....	....
3/24/25	...	..	...	...	2,834	.....	.....	.....	120	4.1	18.0	45.0	1.70	.....	....
3/25/25	...	..	...	...	.....	1.013	.....	.....	...	....	....	....	....	.....	....
3/28/25	...	70	142	80	.....	.....	.....	.....	...	....	....	....	....	8,150	82%
4/ 2/25	...	..	...	...	3,785	.....	.....	.....	...	....	....	....	....	.....	....
4/ 7/25	154	68	142	92	.....	.....	.....	.....	...	....	....	....	....	.....	....
4/10/25	...	..	...	...	2,850	.....	.....	.....	...	....	....	....	....	.....	....
4/11/25	...	..	...	...	.....	1.011	None	.....	...	....	....	....	....	.....	....
4/13/25	...	..	...	...	.....	.....	.....	29%	148	2.9	11.1	25.2	1.87	7,200	....
4/14/25	158	72	140	88	.....	.....	.....	.....	...	....	....	....	....	.....	....

* Albumin, glucose and ketones negative throughout. Bile positive from February 24 to March 3. Discharged April 14.

The improvement in blood chemistry findings was conspicuous in regard to urea and nitrogen retention, and suggests that by withdrawal of these elements in the bile, a load is lifted from laboring kidneys, permitting better function. This is in keeping with the latest experimental work of Mann,[25] indicating that the liver is the chief organ concerned with the formation of urea.

SUMMARY OF THERAPEUTIC RESULTS SECURED

In a recent study of 376 cases, 318 were treated by nonsurgical measures alone, in which duodenal drainage was featured. Some patients had incipient disease, some late pathologic changes with complications, and

25. Bollman, J. L.; Mann, F. C., and Magath, T. B.: Am. J. Physiol. **69**: 371 (July) 1924. Mann, F. C.; Bollman, J. L., and Magath, T. B.: Ibid. **69**: 393 (July) 1924.

many were seriously ill. Thirty per cent. remained "cured," i. e., symptom free for from one to four years; and objective findings became normal.

Fifty-two per cent. were so much improved as to resume former occupation, discard further active treatment and remain in good health for periods longer than one year.

Nine per cent., in a group representing chronic illness of many years' duration, were considerably improved.

Two per cent. were entirely unimproved. Only one patient (0.2 per cent.) died.

Of this series of 376 patients, fifty-two had gall tract surgery practiced without relief, averaged two abdominal operations per patient and were badly incapacitated. This result was partly due to persistent postoperative complications and partly to bad choice of original operation, or incomplete exploration and failure to recognize a multiple lesion. Many were found to have residual pus or bacterial foci in tonsils, teeth, etc., which accounted for relapses or unfavorable end-results.

Twenty-seven of these fifty-two patients were treated entirely by various nonsurgical procedures, including biliary drainage and vaccines with marked improvement; nineteen patients required further gall tract surgery, preceded and followed by nonsurgical drainage, before health was restored.

Our five years' experience has shown that excellent end-results have been secured in three out of four gall tract patients by the use of nonsurgical measures alone. It is impossible to evaluate end-results in any comparative series of gall tract cases in which operations were or were not performed and draw reliable conclusions. Individual cases vary too greatly. But analysis of the details of this study will show that the results speak for themselves.[18]

We believe that many gall tract operations now being done (often because of errors in diagnosis) might be avoided if expert nonsurgical management is available; but, we also believe that in conditions of chronic gall tract disease, the indications for cholecystectomies may even be increased.

This seeming paradox is explained by the fact that diagnostic biliary drainage, when intelligently performed, will detect larger numbers of nonfunctioning gallbladders due to obstructed cystic ducts, with associated evidence of hepatitis or cholangeitis. This will demand a larger number of cholecystectomies to break the lymphatic vicious circle between liver and pancreas, that only surgery can accomplish. Thus, only the functionless gallbladder will be removed, to the benefit of the patient. We believe that there will be a smaller number of postoperative relapses if cases treated by surgery are given preoperative and postoperative nonsurgical drainage.

All cases of advanced gall tract disease theoretically require surgery; but cholecystectomy removes only one end-product of gall tract disease, and not the disease itself. Practically, surgery might better be confined to removal of pathologic conditions (gallbladder, stones, cancer, adhesions, stricture, etc.) or to short-circuiting operations for nonremovable obstructive lesions (cholecystoduodenostomy, etc.) and then drainage established in nonobstructive lesions by duodenal tube methods. This will prove to be the better, if not the only, way of breaking the second and third vicious circles in chronic gall tract disease.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. CARLSON; MANN; GREENE; OPIE; MCCLURE, MENDENHALL AND HUNTSINGER, AND LYON AND SWALM

DR. L. G. ROWNTREE, Rochester, Minn.: Dr. Carlson's statements fairly present our present knowledge of the physiology of liver function. Dr. Whipple calls attention to another important matter, and I hope that we shall follow up his suggestive leads in regard to possibilities of better dietetics in the treatment of anemia. Dr. Mann's work will go down into medical history, along with Claude Bernard's work on the glycogen function of the liver. By means of hepatectomy he has been able to gage the function of the liver. His findings are of tremendous significance to biology, physiology and medicine. Unfortunately, the results of his work are not all generally applicable in the clinic. His uric acid work, however, contains another fertile suggestion, and it should be worth while to follow this up in the clinic. Dr. Opie has touched a most important need in medicine: the correlation of function and morphology in the study of diseases of the liver. There is no field of differential diagnosis at the present time more unsatisfactory than that of the liver, especially in the field of jaundice. A knowledge of such matters as Dr. Opie has discussed is essential to diagnosis. Furthermore, we need more information on the funcion of the liver in experimentally induced diseases of the liver. Dr. McClure has brought out new methods of approach. It seems a field well worth while cultivating. I myself do not believe we are justified in drawing definite, clean-cut conclusions, relating to liver function, on the quantitative side, from the data based on the examination of mixed juices found in the duodenum. The question of interpretation of the findings is difficult. We must go slowly in accepting these results as quantitative for the liver, until they are proved to be so. I am particularly interested that Dr. McClure is following function from the standpoint of treatment, for, after all, it is of great significance to ascertain whether the measures employed in liver diseases are effective from the standpoint of benefit to the patient. We have found that circulatory disturbance is a great factor in some conditions, particularly in cirrhosis of the liver. In some instances, the liver function has improved as the ascites of cirrhosis has been cleared up under the use of novasurol. Dr. Lyon's work is familiar to us all. In Rochester, we rarely use and rarely obtain information of value from transduodenal drainage from the standpoint of diagnosis. Also, we are using it less frequently than formerly in treatment, though we do get favorable results from it at times. However, in fairness, I should admit, that, so far as I know, we have had no experience with the long-continued drainage to which he has referred. I concur in Dr. Greene's conclusions most heartily. The cases that constituted the basis of his report are proved cases. In the field of function study there exist many striking analogies in regard to the liver and kidney. At present, we consider the phenoltetrachlorphthalein test the most valuable single test. I wish to pay tribute to Dr. Rosenthal, who has done much to popularize this test.

DR. FRANKLIN W. WHITE, Boston: The most serious difficulty in liver function tests is the tremendous compensatory power of the liver, the large margin of safety, which is a fine thing for the individual, but hard for the test. The older tests for sugar tolerance, and nitrogen in the blood and urine have been disappointing in diagnosis. They have been rather characteristic of disease groups, as Dr. Greene has said, not diagnostic in individual cases. Dr. Greene has been wise in laying stress on two tests, on the excretion of certain dyes and the detection of serum bilirubin. The excretion of tetrachlorphthalein seems to be one of our best methods of diagnosis at present. We get marked retention in serious diseases, such as cancer, cirrhosis and syphilis of the liver, and we also get retention in less serious cases, such as infectious jaundice and toxic conditions (after arsphenamin), and by using this test we can follow the condition of the liver. With regard to the serum bilirubin test, there is no question that bile in the blood precedes and is more important than bile in the tissues, and it seems reasonable to use this as a

liver function test, and at the present time it is proving valuable in detecting liver injury. The value of this test may lead to some unreasonable expectations. I will cite a single instance: Jaundice is an important sign of gallbladder disease; we expect some hepatitis. Will the test for latent jaundice help us to pick up more latent gallbladder cases? It would seem not. We get hepatitis, but Dr. Greene found little change in liver function. This is a minor point. I was interested in the close parallelism in the two tests, namely, the retention of dye and the blood bilirubin, and it seems possible at that time we might use the simpler test to represent the whole situation, instead of carrying out both, which means more work. The tests for bile solids which Dr. McClure has presented seem perfectly logical and reasonable; we do not expect a diseased liver to pour out normal bile. There are, however, some drawbacks. The chemical methods for the detection of bile solids are at present dubious, and also the duodenal contents have many variables. We have some stomach contents, some duodenal secretion, some pancreatic secretion as well as a variable mixture of gallbladder and liver bile, and it seems to me remarkable that in the presence of so many variables Dr. McClure's quantitative results have been so consistent. Nonsurgical biliary drainage has seemed to me, from the purely clinical side, to have real value as a method of treatment in a limited group of cases, not so much in emptying the gallbladder as in draining the general liver passages and getting rid of infected bile. Dr. McClure's studies have shown that the duodenal contents are completely changed in character in chronic gallbladder cases after repeated drainage with magnesium sulphate. This perhaps is an indication of real value in this method in certain cases.

DR. MARTIN J. SYNNOTT, Montclair, N. J.: My experience with nonsurgical duodenobiliary drainage began about five years ago, and during this time we have done the procedure approximately 3,000 times. We follow the Lyon technic, except that we now rarely wash the stomach, unless there is a definite indication for so doing, as we have found that the metal tip of the tube passes more readily into the duodenum if the stomach washing is omitted. We believe that the stomachs of certain hypersensitive patients are irritated by lavage to a state of very active peristalsis, which accounts for our failures in intubing the duodenum, causing the tube to coil up in the stomach, and in a few instances actually tying knots in the tube. Our procedure now is to pour through the tube into the stomach, after the tube has been swallowed to the 55 cm. mark, 100 c.c. of water; then we have the patient lie down on the right side, and swallow very slowly, taking twenty minutes to do so, to the 75 cm. mark, at the end of which time the tip is almost invariably found to be in the duodenum. Dr. Lyon has referred to the value of nonsurgical drainage of the biliary tract in diabetes. I should like to elaborate a little on this subject. In the fall of 1921, a series of experiments was conducted at the Physiatric Institute in Morristown at my suggestion and under my direction, and the report of the work was published by my co-workers, Dr. J. J. Selman and Dr. H. S. Martland and myself in the *Journal of Metabolic Research*, March, 1922. We did duodenobiliary drainage in fifty-three diabetic cases. Twenty, or 37 per cent., of these cases gave a definite history of jaundice or affections referable to the upper right abdominal quadrant. Six cases, or 11 per cent., showed positive and conclusive evidence of existing biliary infection. This led us to conclude that, in an appreciable percentage of diabetic cases, ascending duct infections, or gallbladder infections extending into the pancreas, either directly or through the lymph channels, played an important part in the etiology of the disease. We believe that every case of diabetes should be carefully examined and studied according to the Lyon method because it is the most practical, the most available, and in certain early cases the only method of determining whether or not the biliary system is infected. Where such infection is found to exist, it is most important to give therapeutic drainages in order to eliminate one of the main factors contributing toward downward progress. Since this article was published, I have had a chance to observe the results of duodenobiliary drainage in numerous cases of chronic diabetes in the middle aged, where I have reason to believe gallbladder and duct infections have been the main etiologic factors in causing the pancreatic disease, and where continued therapeutic drainage according to the Lyon technic has not only cleansed up the biliary infection but has relieved the clinical symptoms of the diabetes and increased the carbohydrate tolerance of the patients, without insulin or rigid dietary regulation.

DR. J. QUINCY THOMAS, Morristown, Pa.: I am convinced that biliary drainage as a therapeutic measure is no longer a theory; it is a fact. Proved theories are facts. We all accept new theories with more or less mental reservation, but after they have become proved we should be broad minded enough to accept them as facts and I have accepted biliary drainage as a therapeutic and diagnostic measure because we are dealing with facts. Prior to the publishing of the technic which has been so carefully worked out by Dr. Lyon, what method did we have of treating these cases outside of surgery? Nothing but the common methods which some of us are still sticking to. Biliary drainage today as carried out by the Lyon method, and not any short-cut method, will give wonderful results in the properly selected cases. Following cholecystectomies, what methods did we have prior to the biliary drainage method? Again, we had nothing of any account. We gave calomel and magnesium sulphate, sent our patients to resorts and what not, and when they returned we had to resubmit them to the surgeon. Today we have a very simple method which will give complete relief to our patients, and we can promise much in these cases if it is carried out according to the method as subscribed by the author. I want to make the plea to stick to this method; I am sure the results will be surprising. The three vicious circles of which Dr. Lyon spoke in which he plainly admits that the first cycle can be cured only by surgery is exactly right. The two other cycles will respond to proper biliary drainage. The Lyon method includes not only passing the duodenal tube into the duodenum and draining off a few cubic centimeters of bile and trying to arrive at a diagnosis, but also a very careful study of the patient as a unit, and we sometimes get overscientific.

DR. S. M. ROSENTHAL, Montreal: In an attempt to find out the mechanism by which certain dyestuffs and bilirubin are excreted by the liver, I have studied their behavior from a physicochemical standpoint. By ultrafiltration experiments I have found that they circulate in the blood firmly bound to the serum proteins. This prevents their elimination by the kidneys. Bile salts, by virtue of their effect on surface tension, are able to liberate bilirubin and these dyestuffs from their adsorption compound with the proteins, so that they can be further excreted by the liver. This is of interest because it indicates a physiologic rôle for the bile salts in washing away, from the blood proteins, substances that are excreted in the bile, and because it is an approach to the explanation of certain phases of the mechanism of hepatic secretion. The objection is frequently raised that dyestuffs are unsuitable to test the functional ability of an organ because they are unphysiologic. This can hardly be upheld if we do not even know what physiologic means, and my studies indicate a similar mode of excretion for the dyes and for bilirubin. Bromsulphalein, a new dye worked out by Dr. White and me, has proved the most satisfactory in the clinic as a test for hepatic function because of its simplicity of technic and its freedom from untoward reactions. Normally it is excreted in the bile more rapidly than any other substance I know, and in liver disease its retention in the blood is the most striking. In acute liver disease there is a tendency for the various function tests to give parallel results, although differences occur which have not been fully explained. In chronic liver disease, information may be obtained from the dye test which can be obtained in no other way.

DR. ROBERT H. ROSE, New York: Nonsurgical gallbladder drainage, in my experience, has benefited patients who could not have been helped with other methods. The first case was migraine headache, occurring twice a week. I had dieted this patient according to my former information and had produced some benefit, but the headaches were recurring, not quite so severe, but as often, and the nonsurgical gallbladder

drainage stopped the headaches. I have seen the same thing happen in other cases. There is no question about it. I have used silver nitrate, 1:6,000, in conjunction with Epsom salt, and found that it does not interfere in any way with the use of Epsom salt. One can inject Epsom salt and follow almost immediately with silver nitrate, and it does not interfere. I believe that silver nitrate is of benefit in many instances, and helps in these cases as well. It will aid in drainage when there is a great deal of mucus; it cuts mucus and permits the solution to come through the small tube.

Dr. L. R. Whitaker, Boston: With regard to the question of nonsurgical biliary drainage, a discovery has been made which seems to be of considerable importance. In 1922, Dr. Edward A. Boyden of the Medical School of Harvard University found that by feeding cats a mixture of egg yolks and cream the gallbladder could be made to empty in from three to six hours. We have found independently by the use of cholecystography at the Peter Bent Brigham Hospital that after the patient had been given food containing fat, the gallbladder shadow would exhibit a marked shrinking within a period of from half an hour to two hours. Following this we tried several substances, among which was magnesium sulphate, which had been previously observed by Silverman and Menville to produce a reduction in size of the gallbladder shadow when given by the duodenal tube. The mixture of egg yolks and cream produced in one subject a much more striking reduction after a period of one and one-half hours than was exhibited in another subject after the intraduodenal injection of magnesium sulphate over a longer period than that. This is a finding which I believe has a great deal of bearing on nonsurgical drainage and would seem to offer an entirely new view.

Dr. William Henry Kraemer, Wilmington, Del.: I consider myself an embryo in duodenal drainage. I am still working on my first hundred cases. There were just one or two points that were not brought out and I want to ask largely for information. The first was that Dr. McClure, who spoke before Dr. Lyon, mentioned the variation in dose of magnesium sulphate in those cases in which he failed in the usual prescribed amount. The second was the striking experience I had in finding the short chain streptococci in gallbladder cases, which also was revealed in the focal infection of tonsillar abscesses and in teeth. The other point I wanted to make was that I usually follow up my gallbladder drains with sodium phosphate to stimulate still further the function of the liver. What I principally wish to ask is, What are the variations in magnesium sulphate doses from the usual ones described by Dr. Lyon?

Dr. Daniel N. Silverman, New Orleans: The original studies on the effect of magnesium sulphate administration on the visualized gallbladder have been made by Dr. Menville and myself. The introduction into the duodenum of a singular dose of magnesium sulphate solution produces an apparent modification in the size of the gallbladder shadow. Our later experiments have proved that repeated injections of magnesia produce a greater reduction of the gallbladder shadow. The employment of magnesium sulphate for gallbladder drainage by the Meltzer-Lyon method is obviously advantageous, since it allows for a microscopic study of the bile return.

A. J. Carlson, Chicago: One of the men discussing these papers said he was convinced that what Dr. Lyon said regarding biliary drainage, diagnosis and treatment was true. He said he was convinced of its truth. I can only say I wish it were true. I did not have time to develop the physiology of the gallbladder and the possible reflex relations to the duodenum. I have tried my best to understand the physiologic mechanisms of the results reported on gallbladder drainage by Lyon's technic. Textbooks usually state that bile does not enter the intestine between meals. That is wrong. If there is no mechanical obstruction, bile enters the intestine practically all the time, even during fasts of from fifteen to thirty days in man, and of sixty days in dogs. Show me the data proving that magnesium sulphate in the duodenum drains the bile tract any more completely than does food. I do not understand Dr. Lyon when he says that he "disinfects the duodenum." What is meant by "poisoned bile"? One of the men reported hookworms in the contents returned from the duodenum. How many hookworms would he have secured with a dose of salts by mouth followed by examination of the stools? The removal from the body of the amount of bile reported cannot have much significance either for the gallbladder or for the intestine, unless there is an unusual permeability or irritability of the intestine. Pus in the bile may be significant, but what symptom is induced by this pus acting in the intestine? We are swallowing bacteria every day. There are a few bacteria that are specifically toxic in the intestine. There are a few toxins poisonous by mouth, but, so far as I know, we could eat pus, ordinary pus, and not be influenced, excepting esthetically. It is not clear, therefore, that finding bacteria or pus in the duodenal content means injurious effects from the bacteria or bile lower down. The vicious circles that Dr. Lyon describes are largely theoretical, except the first one, in which there is mechanical obstruction. I have tried to understand the duodenal drainage therapy on its physiologic basis. I do not understand how the effects reported can possibly be due to drainage of a patent bile system with the additional removal of some of this bile from the duodenum. In saying this I may merely be exposing my ignorance. But I feel that in the cases in which Lyon's duodenal drainage is followed by improvement we must search for additional factors. Koch's postulates are still good science and good medicine. Has Lyon or Smithies reproduced the disease by putting the duodenal return into the duodenum of well persons or dogs? Dr. Rowntree said I was a harsh critic. I try to be fair in my destructive and helpful in my constructive comments.

Dr. George H. Whipple, Rochester, N. Y.: I am a little bit skeptical about some of the things Dr. McClure said. I was not aware that there were accurate tests for bile salts in the presence of duodenal secretion. I should like to be pleasantly surprised. Therefore I do not know just what Dr. McClure was measuring, but I don't believe he was measuring bile acid. I know a little about the dye test in the clinic from my association with Dr. Rowntree some time ago. I believe that in the literature too much emphasis has been placed on these dye elimination tests when jaundice and obstruction are present in the biliary passages. I don't believe this dye test is of any value whatever when there is obstruction of the bile passages. With no abnormality of the bile passages, dye elimination has definite value; but how often can the clinician be sure that the passages are normal? I feel that the interpretation of the dye test in many clinics has not been rigidly enough controlled. I may say that Dr. Greene and Dr. Rowntree have been very careful in their interpretation.

Dr. F. C. Mann, Rochester, Minn.: It is rather gratifying to me after working several years on the physiology of the liver to have this free discussion. It has brought out the great importance of the liver not only physiologically but also clinically. I think that in future years we are going to see the liver occupy a more important position physiologically, pathologically and clinically. Let us go a little slow in some respects until we know more about the function of the liver. For example, the levulose test was mentioned as a method of determining liver function. In some recent experiments we have found that the body can seemingly utilize levulose without the liver. How could it be a liver function test when the body can utilize it without the liver? This is true also of many other of the liver functions. In many of the physiologic processes in which the liver is involved, other organs or tissues also play an important part. A good example of this is the relation of the liver to the blood sugar level. The liver regulates the concentration of glucose in the blood, but the pancreas and other tissues have to do with its utilization. The difficulty of establishing a glucose tolerance test for liver function is readily seen.

Dr. Carl H. Greene, Rochester, Minn.: Dr. White raised the question of the use of the dye test in cases of jaundice. As I tried to make clear, jaundice completely dominates both the clinical and the laboratory findings. Under these con-

ditions the dye test and the serum bilirubin are of value not so much in establishing the presence of jaundice as in furnishing a quantitative means of following the progress of the jaundice. Serum bilirubin will show the presence of latent jaundice, and in the absence of that dye, reaction will be of value. The dye test particularly will show diffuse injury to the liver, as a whole, much more readily than a localized lesion. Prolonged chloroform anesthesia will produce diffuse necrosis throughout the whole liver, and the dye test will show marked retention. Chloroform injected into the portal vein will produce areas of local necrosis, but the remaining liver tissue is undamaged. Under these conditions the dye test will not show changes because the uninjured normal portion of the liver is sufficiently active to give a normal test. The same thing is true in clinical experience. A patient with multiple metastasis with nodules in the liver may have sufficient undamaged liver tissue to result in a normal test. I saw one patient with a hydatid cyst giving a normal test because the left lobe of the liver was in normal condition, and 10 or 15 per cent. of liver may be sufficient to carry a patient through. Positive tests are of particular value in extending and increasing the knowledge that we obtain from clinical means. The question of latent jaundice in cholecystitis came up. The clinical picture of cholecystitis with stones is recognized by repeated attacks of colic and jaundice. Clinically recognizable jaundice does not always follow such colics. The finding of a bilirubinemia or latent jaundice in such a case has the same significance as jaundice. Medical literature has long been filled with references to biliousness, torpid liver, and so forth. An attempt has been made to interpret these in terms of actual insufficiency of the liver. Many different physiologic factors may enter to explain that condition. At present, our tests will not give positive objective evidence of actual disturbance in the liver in many cases of that type. It is all part of the larger field of the disease of the liver, and I don't want to be misunderstood in that relation because these tests are only one point in the question of diagnosis. The final test will depend on the correlation of the studies, not only of the physiologist, but of the chemist, the pathologist, the clinician, the internist and the surgeon as well.

DR. EUGENE L. OPIE, Philadelphia: Dr. Lyon has suggested that toxic products from the liver return to the liver in vicious circle. It is important to realize that the liver has considerable capacity to overcome infection. The bacterial content of the blood might suggest that the liver has failed to control bacteria brought to it, but we have no index of its relation to toxic products of bacteria.

DR. B. B. VINCENT LYON, Philadelphia: Dr. Carlson has challenged me to defend my position. The experimental physiologist who lives each day among his laboratory animals sometimes knows very little about the sick human animal as seen in general practice. Our problems are therefore different. Dr. Carlson asks me how much of my belief is based on proved facts and how much on theory. The laboratory problem can often be proved with mathematical exactness. Few clinical experimental problems can be proved except by deductive reasoning, and rarely in their entirety. The results of our methods of diagnosis and treatment of gall tract diseases speak for themselves. Our diagnostic platform utilizes all the agents spoken of today, but in addition we gain a further impression of the total clinical picture by a properly conducted study of duodenal aspirates. If a given sick man's gallbladder is surgically removed or its contents are drained and the patient regains health, no particular criticism is directed against surgical methods or the question raised as to why that patient improved. We accept that as a clinical fact. But if the sick man does not improve or becomes worse and goes through repeated operations and still continues to relapse, as a result of the vicious circles I have described, no matter how hypothetic Dr. Carlson chooses to call them, and, if under our methods of nonsurgical drainage plus total management the patient regains health and remains well under close observation, I submit that this should establish reasonable clinical proof of the value of such methods, even though we cannot explain the exact why of it to the scientist's satisfaction. Dr. Carlson asks me just what poisons we drain out of the liver. I wish I knew. I wish the physiologists or the physiologic chemists could tell us. We have listened to a symposium on the detoxicating and bactericidal powers of the liver and its other functions, and still we don't know. There is a great difference between what the healthy liver cell can detoxicate or destroy or manufacture, and what the diseased liver, working with damaged heart, kidneys, spleen or intestines, can do. Our removal of bile from such patients improves them. Hence, we argue that the bile is poisoned. Dr. McClure's methods should be commended. They are a step in the right direction and furnish help not yet secured from the pure scientist. We need more such work on the human animal. Such clinical studies will in the end contribute much to the progress of medicine that will be of profit to the patient.

DR. F. C. MANN, Rochester, Minn.: In order that we might not go with too many definite, clean-cut things, I want to state that the pictures showing differences in sizes of gallbladder do not necessarily mean that the gallbladder emptied by forcing contents through the cystic duct. If these substances open the sphincter, the gallbladder would not fill and in the time available between pictures the size of the viscus could be diminished as much as shown by concentration. I don't know what did happen.

THYMUS AND THE TREATMENT OF ITS HYPERFUNCTION

CLINICAL AND ROENTGENOLOGIC CONSIDERATIONS *

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The study of the thymic shadow shown on the roentgenogram was undertaken in the Newly Born Service of Touro Infirmary about three years ago with the idea of arriving at some definite conclusions as to the size, shape and position of the thymus. Examinations were made, beginning during the first twenty-four hours of birth, up to the present time, and an endeavor was made to show what type was causing the peculiar syndrome that we see in children.

The first authentic description of this clinical picture was in Rokitansky's textbook, which appeared in 1861. He described a general hyperplasia of all the lymphatic structure, with an especial reference to the increase in the size of the thymus. Arnold Platauf, in an article published in 1889, still adhered to Rokitansky's theory of a specific constitutional anomaly. Sheila, in 1876, showed that the specific thymic extract, when injected, produced a long train of clinical symptoms. This extract is never present in the human embryo, but forms after birth. (It is probably a hyperthymization in the gland that is hypertrophied which causes the symptoms seen.) Bartel, as the result of more than a hundred necropsies on children, interpreted status thymus lymphaticus as being a part of a general glandular hypertrophy. This hypothesis we have been unable to prove or disprove, as we have had only one death that came to necropsy.

We will not repeat the statistics of others, as this is purely a clinical paper, but we will try to give our experiences together with the method of roentgenography and the means of radiotherapy.

* From the Department of Pediatrics and the Department of Roentgenology, Touro Infirmary.

* Read before the meeting on radiology in the Section on Miscellaneous Topics at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

The child is brought to the roentgen-ray department within the first twenty-four hours of birth; a roentgenogram of the thymic area is made, double intensifying screens being used; one tenth second; 80 milliamperes at from 85 to 90 kilovolts; and distance of tube from plate, 36 inches. It is quite essential that the child be held still, and this is best done by one assistant holding the child's arms and head, another the legs, and both making slight traction. The examination is repeated in three, six, nine and twelve months, then again in the second year, and we now have a few cases going into the third year period.

Up to the present, we have been unable to arrive at a definite standard as to the size, shape and position of the gland causing symptoms, some patients having all the effects of a hyperfunctioning thymus, and on examination showing only a very slight enlargement, while other cases in the series, with marked enlargement of the gland, show no clinical manifestations. We have seen patients in whom we reported an enlargement at birth show the same proportionate increase in the gland throughout the entire series. The heart shows no relationship in size to the thymus, although we rarely see a marked thymic enlargement that is causing symptoms without an increase in the size of the right side of the heart.

In a large percentage of these cases, the shadow of the thymus is seen to the right and left, with the large finger-like projection overlying the right side of the heart. Holmes states that the diagnosis of enlarged thymus is difficult, and when no shadow is seen, especially in patients before operation, a false sense of security is given. This has not been our experience, as we have had a considerable number of cases in which operation was performed, especially for tonsils and adenoids. These patients have had enlarged thymuses and were treated by us, and films made the day before operation and a control made in a few days failed to show any recurrence of the condition or evidence of any ill effects from the anesthetic. We agree with Holmes in regard to the importance of the clinical symptoms, as we always review these cases before a final diagnosis is made; but we both feel that the roentgen-ray findings are of paramount importance. We are not satisfied with negative findings in some of the patients, and in a few cases have made semilateral roentgenograms of the chest to bring out the enlarged gland that merges with the shadow of the aorta. This, however, is not possible in all cases, because of the movement of the child.

It is amazing what some of the films will show in the first twenty-four or forty-eight hours. We are yet to see a patient without enlarged mediastinal glands and with very definite lung markings suggesting some fibrosis, and as these cases are observed, the glands become larger and the markings more pronounced. We think, as time goes on, that this sort of study will bring us to change our ideas of lung pathology from the roentgen-ray point of view. We think that the diagnosis congenital heart disease should not be made too readily without considering the thymus as a causative factor. We do not wish to suggest in this paper that all pathologic conditions within a child's chest are due to an enlarged thymus, but on the contrary, we only desire that the roentgenographic findings be considered most carefully.

Finally, as a matter of technical detail, we are now working on a plan to make exposures during both systole and diastole of the heart for the sake of comparison. We have noted an apparent enlargement during diastole that disappears during systole as the result of a marked engorgement of the gland with blood during one period of the cycle. This presents a great deal of technical detail in regard to apparatus and will have to be done eventually with some type of electrical timing device. Report on this phase of the problem will be made later.

Treatment, after the diagnosis of the enlargement is established, is done under the supervision of one of us (E. R. B.). Our choice must be made whether the irradiation shall be done with roentgen or radium rays. In the application of the rays to children, theoretically the use of radium is preferable, as it can be fixed firmly in the desired location and, no matter how restless the child, the rays are constantly directed to the region of the gland. In using radium, our method has been to use 100 mg. of radium element in 2 mm. of brass filter, separated from the skin by a distance of 5 cm., firmly fixed in place by adhesive plaster reinforced by a binder. The duration of the exposure has varied from eight to twelve hours, depending on the urgency of the case and the size of the thymus, as well as the age and size of the child. Anterior applications have been the rule, although in giving a series of three radium exposures we have usually applied the first dose anteriorly and the second dose posteriorly, and lastly we have come back to the anterior chest wall. The interval between applications has usually been from ten days to two weeks, unless the condition of the child is grave. Three applications, with no improvement, has been our limit of radium dosage, as we feel that if we have accomplished nothing by this, the case is not amenable to irradiation. Our success, however, has been quite uniform, and rarely have more than three or four applications been required. Here, as with roentgen irradiation, we have observed no ill effects.

Our roentgen-ray dosage, our method of choice in thymus irradiation, will possibly seem rather mild, but we feel that our best reply to any question of its adequacy is to refer our critics to our results. We have yet to encounter a case of thymic enlargement that has not been controlled with the ray. We have tried various technics of treatment—from 1 to 3 mm. of aluminum filtration; from 5 to 7 inch spark gap; 5 milliamperes, 10 inches distance, from one to three minutes' time—and we have finally settled on uniform exposures of one minute, 7 inches gap, 5 milliamperes 1 mm. of aluminum filter, 10 inches distance, this giving approximately one tenth of a skin unit. The number of treatments required is determined primarily by the clinical symptoms; and to a distinctly secondary degree, by the size of the thymus as shown in the roentgenogram, for we have frequently found the absorption of the gland following very slowly after a complete and permanent disappearance of the clinical picture. No bad effects have been observed following the treatments. The only difficulty attendant on roentgen irradiation of the thymus has been the restlessness of the patient, but it has always been possible in some way to hold the child still for the length of the treatment. The average number of exposures required is between four and five.

Out of a total of 623 cases of children irradiated at various ages from birth to 39 months, 125 cases of thymic enlargement have been observed, or approximately 20 per cent. The length of time these cases have been under observation has varied greatly, owing to the difficulty of retaining clinic patients under observation.

These cases of thymic enlargement have had varying numbers of control examinations, roughly averaging three. The necessity for control of these cases has in only about one third of the cases extended longer than a period of six months.

ABSTRACT OF DISCUSSION

DR. I. S. TROSTLER, Chicago: A little trick that I employ in diagnosis is to get the baby to crying and make the exposure while the child is crying. I have another little stunt for holding the baby during the treatment. I place a folded sheet under the child, bringing it up to the axilla; I put the arms through the openings and pull the sheet tight, and the baby cannot move the arms. Another sheet fastened firmly over the legs holds the baby motionless.

DR. PRESTON M. HICKEY, Ann Arbor, Mich.: Do you make the exposures in an anteroposterior or postero-anterior direction?

DR. C. E. PIERSALL, Reno, Nev.: What was the dose of radium?

DR. MAURICE LENZ, New York: How soon do you repeat the second dose? In some experimental work that I did, the young rabbits had the thymus completely regenerated within three weeks, after one twelfth of an erythema dose.

DR. SAMUELS: Roentgen ray or radium?

DR. LENZ: Roentgen ray.

DR. C. D. CHAPPELL, Flint, Mich.: I have treated several cases of enlarged thymus. One baby, with a diagnosis of congenital heart lesion, died three or four days afterward from pneumonia. At the necropsy, we found a thymus which was so large that it obliterated the heart. Two children, whom I was unable to treat, died on the way home from my office. The treatment that I use is essentially the same as that of Dr. Samuels, but the exposure is longer because I increase the distance.

DR. HENRY K. PANCOAST, Philadelphia: We have treated a large number of cases of suspected enlarged thymus in children and also a group of adult patients with persistant thymus who were going to be operated on for goiter. I cannot make a roentgen-ray diagnosis of enlarged thymus in children in many instances, because it is very difficult to say whether the thymus is too large for the age of the child or not. Often the thymus seems to be about the normal width and density for the age of the child, and yet there are very definite clinical signs of obstruction. I believe that these cases need treatment, and I rely entirely on the clinical diagnosis as an indication for treatment. We administer a little less than half an erythema dose with the low voltage machine, delivering about 130,000 or 135,000 volts. This seems to suffice in most instances. Sometimes we have to repeat the treatment in ten days or two weeks. We rarely have to give more than two doses. When children are obviously thymic cases, and when during the roentgenologic examination we are very much alarmed at their condition for fear they may die on the table, we do not treat them with the roentgen ray. I would hesitate to tie such a child on a table and to put a roentgen-ray tube over it. We refer such cases to a nearby institution to be treated by a radium pack. If we wait until the child gets perfectly quiet, lying down, the pack can be adjusted and a part of the dose given without danger. This should be a fairly good part of the dose, however, to get the effect. Later the remainder of the dose can be given. This is a much safer procedure than attempting to use the roentgen ray. Several clinicians in Philadelphia have been much alarmed by having had a thymic death or two in their practice, and as a result they are taking no chances with children under suspicion. If they suspect that a child is likely to have an enlarged thymus, a single treatment can be easily given and does no harm.

DR. A. L. GRAY, Richmond, Va.: I agree with Dr. Pancoast. We must not be governed altogether by the size of a thymus as it appears on the roentgenogram. I have seen a perfectly normal child, so far as could be determined by physical examination or clinical evidence, with a thymus so large that if we had observed anything like it in size in a supposed thymus case, we would not hesitate to say it was pathologic. My experience has been altogether with roentgen-ray treatment. My technic is approximately one-half an erythema dose, but I usually irradiate two areas in a series, one on the front and one on the back.

DR. ERNEST C. SAMUELS, New Orleans: The roentgenograms are made in the anteroposterior position. The radium dosage usually is 100 with 3 mm. of brass filter, at a distance of 5 cm. from the skin. We repeat this dose in seven or eight days and make a control roentgenogram before the treatment is given. In answer to Dr. Pancoast, I think that our statistics stand for what they are. We have not had one single death on the table, and we have had these children in all stages of the thymic syndrome. We have been worried sometimes. The one death we had was not a thymus death. It was due to pneumonia, apparently an aspiration pneumonia. It was one of the first twenty-four cases in which we saw the enlarged thymus that had had only one exposure. We have used radium quite extensively in a large number of cases. We shall adhere to our roentgen-ray dosage, because we find absolutely no reason to change over to radium when we have had uniformly good results in these cases. Dr. Pancoast spoke about depending more on the clinical diagnosis in the amount of therapy to be given. All of our work is done in collaboration with the department of pediatrics. It is not purely a roentgen-ray diagnosis, but is done in conjunction with the clinician.

THE SIGNIFICANCE OF EDEMA OF THE FACE IN MYOCARDIAL INSUFFICIENCY *

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The edema that occurs in patients suffering from myocardial failure is characteristically of the dependent type; that is to say, it is almost always most prominent in the lower extremities or across the sacrum, depending on whether the patient has been on his feet or has remained in bed. In the more severe grades of heart failure, edema may involve the subcutaneous tissues of the entire trunk, and free fluid may appear in the abdominal and pleural cavities. The type of edema that we wish to discuss is that which involves chiefly the eyelids and occasionally the entire face of patients with myocardial insufficiency, excluding those who have organic renal disease or obstruction of the veins of the head and upper extremities. In these patients, edema of the face is almost always associated with edema of the usual type, and frequently swelling of the upper extremities is present as well. In other words, the distribution of edema in these cases resembles very closely the edema that is commonly seen in patients suffering from renal disease.

Little reference is made to edema of the face in most of the books on heart disease that we have consulted. Mackenzie [1] says: "If the patient leans more to one side than the other, *in extreme cases* (italics ours), the arm and cheek of that side may become greatly swollen." Miller [2] has observed that children with very severe and acute rheumatic heart disease frequently have puffy eyelids. Crummer [3] has also called attention to edema of the face in myocardial failure, stating that when it occurs, it is usually indicative of some lung or mediastinal condition complicating the

* From the Medical Clinic of the Johns Hopkins Hospital and University.

1. Mackenzie, J.: Diseases of the Heart, Ed. 3, London, Oxford University Press, 1918, p. 307.
2. Miller, R.: The Medical Diseases of Children, Bristol, John Wright and Sons, Ltd., 1911, p. 374.
3. Crummer, L.: Clinical Features of Heart Disease, New York, Paul B. Hoeber, Inc., 1924, p. 24.

original heart disease. In several textbooks, there has been no statement concerning the occurrence of edema of the face.

We have been impressed by the severity of the degree of myocardial failure in patients in whom edema of the face or of the arms occurs. Indeed, practically all such patients that we have seen have died within a relatively short time. We have had the opportunity of observing a number of patients with myocardial failure who, after repeated entries into the hospital, on each of these occasions showing the usual type of "cardiac" edema, have finally been seen with the "renal" type as well. Almost invariably, death has resulted within a few weeks.

The following cases are more or less typical of the others.

REPORT OF CASES

CASE 1.—*Chronic rheumatic endocarditis, mitral stenosis, auricular fibrillation, myocardial insufficiency, infarct of lung.* E. S., a man, aged 41, was first admitted to the hospital in 1899, when he was 15 years old, for acute rheumatic fever and rheumatic heart disease. From this time to June, 1923, he was admitted on six different occasions for acute rheumatic fever or for myocardial insufficiency, or both. In June, 1923, as on other occasions, the symptoms and signs of myocardial failure were typical, the edema being confined to the lower extremities; the blood nonprotein nitrogen was 32.2 mg. per hundred cubic centimeters.

In April, 1925, he entered the hospital for the eighth time. The degree of myocardial failure was extreme; edema was extensive in the lower extremities and trunk, and was present in the face and arms also. The blood nonprotein nitrogen was 68.2 mg. per hundred cubic centimeters. For a short time, there was moderate improvement. May 1, however, following the development of pulmonary infarction, his condition rapidly grew worse; the edema of the face became striking. May 4, the blood nonprotein nitrogen was 86 mg. per hundred cubic centimeters; May 6, it was 77.5 mg.; May 13, it was 92 mg. and May 15, the day of his death, it was 80 mg.

At necropsy, the kidneys were normal except for the presence of chronic passive congestion.

CASE 2.—*Chronic myocarditis (syphilitic); myocardial insufficiency; terminal bronchopneumonia.* J. J., a man, aged 34, in 1917, had a chancre. From March, 1922, to August, 1924, he was a patient in the hospital on four separate admissions. On each of these occasions, he had the usual signs of myocardial failure, without evidence of valvular defects; the blood Wassermann reaction was positive. Edema, when it was present, was always confined to the dependent portions of the body. During two of the admissions, the blood nonprotein nitrogen was 33.5 and 42.8 mg. per hundred cubic centimeters.

On the fifth admission, in October, 1924, there was slight puffiness of the eyelids, in addition to moderate edema of the lower extremities and across the sacrum; the blood nonprotein nitrogen was 38 mg. per hundred cubic centimeters. He became progressively worse. December 8, the blood nonprotein nitrogen was 55.8 mg. per hundred cubic centimeters; at this time edema of the face was striking. He continued his progressively downward course and died, Jan. 29, 1925.

At necropsy, the kidneys showed only chronic passive congestion.

CASE 3.—*Acute rheumatic myocarditis, chronic rheumatic endocarditis, aortic insufficiency, mitral stenosis, myocardial insufficiency, transient auricular fibrillation and heart block.* E. K., a youth, aged 16, at the age of 5, had "rheumatism" in one knee. Following an attack of chorea, at the age of 12, he developed typical cardiac symptoms. These symptoms increased, and were quite severe during the last year.

He presented evidences of myocardial failure, without any edema, in addition to manifestations of acute rheumatic fever. Shortly after his admission, his blood nonprotein nitrogen was 48.6 mg. per hundred cubic centimeters. During the next few weeks, his condition became gradually worse.

May 4, the patient was very ill; it was noted that there was conspicuous puffiness of his hands and face. There was a slight amount of fluid in the abdominal cavity, but no edema elsewhere. On the following day, the blood nonprotein nitrogen was 74 mg. per hundred cubic centimeters. The edema of the face and hands, as well as the other symptoms, increased rapidly, and he died, May 6.

At necropsy, the kidneys were normal except for the presence of chronic passive congestion.

COMMENT

Since the edema that we have observed in these and other patients resembles so closely that which develops in many patients with organic renal disease, it seemed probable that when this symptom appears, it is an indication of disturbed renal function due to the severity of the myocardial failure. We have attempted to gain some confirmation of this view by comparing the renal function of patients with different degrees of myocardial insufficiency. As the criterion of renal function we have taken the amount of nonprotein nitrogen of the blood. In view of the fact that phenolsulphonephthalein excretion may be considerably depressed relatively early in myocardial failure, we have not used this test as a basis for comparison. We have taken the histories of eighty consecutive patients who were admitted to this hospital for myocardial insufficency, and who fulfilled certain requirements. They were all 45 years of age or under, in order to avoid patients who might have significant renal lesions incident to old age; none of them were suffering from hypertension or generalized arteriosclerosis, or gave other evidence that organic renal disease was present. Almost all these patients were subjects of either rheumatic or syphilitic heart disease; a very small number had myocardial failure due to hyperthyroidism.

For the sake of simplicity we have divided the patients into those who died and those who left the hospital improved to a greater or lesser extent. We have subdivided these groups into those in whom the nonprotein nitrogen content of the blood was 50 mg. per hundred cubic centimeters or higher, and those in whom it was less than 50 mg. per hundred cubic centimeters. The data are shown in the accompanying table.

Nonprotein Nitrogen Content of Blood in Patients with Myocardial Insufficiency

	Total Number of Cases	Cases in Which Blood N. P. N. Was Less Than 50 Mg. per 100 C.c.		Cases in Which Blood N. P. N. Was 50 Mg. per 100 C.c. or More	
		Number	Per Cent.	Number	Per Cent.
Died	28	16	57	12	43
Lived	52	49	94	3	6

Without laying too great emphasis on percentage figures, it is apparent from the table that there is a definite relationship between the severity of impairment of the renal function, as judged by the nonprotein nitrogen content of the blood, and the prognosis in myocardial insufficiency. Actually, the figures minimize the importance of the increase in blood nonprotein nitrogen as an indication of the degree of myocardial insufficiency. Of the sixteen patients who died with blood nonprotein nitrogen contents of less than 50 mg. per hundred cubic centimeters, only seven died of progressive heart failure. Of the other nine, four had acute rheumatic myocarditis; one with complete heart block died of prolonged ventricular asystole; two had multiple pulmonary embolisms and infarctions; one had a ball thrombus of the mitral valve; one had subacute bacterial endocarditis; and four, with syphilitic

aortitis and aortic insufficiency, died suddenly, the cause of the sudden death being undetermined. In other words, death in each of these nine cases was due in part at least, to causes other than progressive myocardial insufficiency.

In many of the patients who eventually left the hospital as improved, there was a slight elevation of the blood nonprotein nitrogen, usually not above 45 mg. per hundred cubic centimeters. In general, these figures are substantially in agreement with those which have been obtained by others, including Klein,[4] who has studied the nonprotein nitrogen content of the blood in myocardial insufficiency. We have found, as he has, that although the blood nonprotein nitrogen runs fairly parallel with the severity of myocardial failure, there are a few cases in which this is not true. In a small number of cases, the blood nonprotein nitrogen may be considerably elevated in patients who, though quite ill, later improve; and there are a few patients who die without ever showing a distinct rise in blood nonprotein nitrogen. Klein has attributed these exceptional findings to factors other than renal functional impairment, chiefly the rate at which the edema fluid and tissues absorb and give up the nonprotein nitrogen of the blood during various stages of myocardial failure. That is to say, even though functional impairment of the kidneys may tend to cause the blood nonprotein nitrogen to rise, the nonprotein nitrogen may diffuse from the blood into the edema fluid and tissues at a greater rate, so that the blood nonprotein nitrogen may remain at a relatively low level. Conversely, during periods of improvement, the blood nonprotein nitrogen may rise, because of the fact that the nonprotein nitrogen of the edema fluid and tissues diffuses into the blood at a greater rate than it is excreted by the kidneys. In any case, the level of the nonprotein nitrogen of the blood depends on a balance of these two factors.

We have presented these figures of the blood nonprotein nitrogen in patients with myocardial failure in order to show that it is likely that the renal type of edema which is seen in patients with severe myocardial failure is due to functional impairment of the kidneys. Unfortunately, we do not have figures for the blood nonprotein nitrogen of all the patients who have had edema of the face. In all but one of the patients whose blood nonprotein nitrogen figures are available, there was a definite increase. In view of Klein's studies, it is not to be expected that every patient with functional impairment of the kidneys, even though severe, will show an elevation of the blood nonprotein nitrogen.

We do not mean to imply that the severity of myocardial failure is to be judged by the nonprotein nitrogen content of the blood. The clinical symptoms and signs are usually clear enough. Our purpose is to offer an explanation for the type of edema that we have described, the distribution of which is unusual in patients with heart failure. We wish to point out also that when there is distinct depression of renal function, even when there has been no previous structural change in the kidneys, myocardial failure has advanced to such a stage that it is usually incompatible with life.

SUMMARY

In cases of advanced myocardial insufficiency, occasionally edema of the "renal" type may appear, involving the face and often the upper extremities. It is probably due to impaired renal function, and when it appears it is usually indicative of a grave prognosis.

4. Klein, O.: Ueber das Verhalten des Reststickstoffs im Blute bei kardialer Stauung, Ztschr. f. klin. Med. **93**: 137 (Sept.) 1922.

CONVALESCENT SERUM IN PRE-PARALYTIC CASES OF POLIOMYELITIS

RESULTS OF INTRAMUSCULAR ADMINISTRATION *

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AND
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The brilliant observations of Levaditi and Landsteiner, Römer and Joseph, Flexner and Lewis, and Anderson and Frost that immunity or neutralizing substances to the poliomyelitis virus are present in the blood serum of recovered monkeys and human beings were followed fairly promptly by the reports of Netter and his associates in France and later by Amos and his co-workers in this country on the use of convalescent serum in the treatment of the disease. The French investigators used the subdural method of injection and believed that they had unquestionably proved the procedure to be of value. They stressed the time element particularly and urged that the injections be given in the earliest stages of the disease. The American observers employed the intraspinal and intravenous routes either directly into the blood vessels or indirectly by way of the subcutaneous tissues, and their results certainly justified their conclusions, that the earlier in the course of the disease the serum is employed in suitable doses, the more promise there is of benefit, and that the action of the serum appears to be more precise and definite in arresting paralysis than in rapidly bringing about its retrogression.

The adoption of the intramuscular method of administration of the convalescent serum in the treatment of poliomyelitis was determined on only after careful consideration of several cardinal facts associated with the disease. Poliomyelitis must be classed, at least in its early stages, as a general infection. Both the symptomatology and the consistent involvement of organs other than the nervous system, notably the liver, spleen and lymph nodes, bear irrefutable proof of this fact. Furthermore, the pathology of the disease with its striking perivascular infiltration in all the viscera supports the view that the blood and the blood vessels are intimately associated with the action of the virus on the parenchymatous tissues. Peabody, Draper and Dochez, in their encyclopedic monograph on poliomyelitis, call attention to the striking changes in the liver, characterized by areas of necrosis closely associated with the blood vessels, chiefly the portal vein, but also with the central or sublobular vessels. Under these circumstances, it can hardly be questioned that the virus is carried very largely by the blood stream.

The exact method whereby natural immunity is developed in this disease has not been determined, but whether it is a function of the tissue cells, as is more likely, or a property inherent in the blood makes no difference as far as the significant presence of immune substances in the blood stream of convalescent patients is concerned. When recovery occurs without treatment, it must be accomplished by means of the immune substances in the blood, and it seems logical to assume that, in furnishing these immune bodies artificially to an individual suffering from the disease, the closest adherence to the natural processes should be carried out. Poliomyelitis is therefore a disease in which the virus

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is transported very largely by the blood vessels, in which the effects of the virus manifest themselves by marked pathologic changes around these blood vessels and in which recovery is associated with the presence of immune substances in the blood. It seems reasonable therefore to assume that, in the treatment of the condition, a mode of injection should be chosen whereby the antisubstances are made available to the tissue cells at the earliest possible moment, particularly when one considers the tremendous importance of the time element in determining the question of successful treatment. Under ideal conditions, therefore, there is no doubt that the intravenous method of injection is desirable. From a practical standpoint, it is impossible. The difficulties incidental to procuring convalescent serum in sufficient amount and the time lost in carrying out those laboratory procedures necessary to make the intravenous injection of human serum a safe practice are disadvantages so great as virtually to preclude intravenous therapy as a common practice. On the other hand, the subcutaneous method of injection is definitely contraindicated if one is justified in drawing conclusions from analogous experiments with antitoxin in horse serum when the antitoxin is made available to the tissues two and one-half times as rapidly by the intramuscular as by the subcutaneous route. Even without experimental proof, it is certainly likely that absorption will take place more quickly in the depths of the muscles than from the subcutaneous tissues.

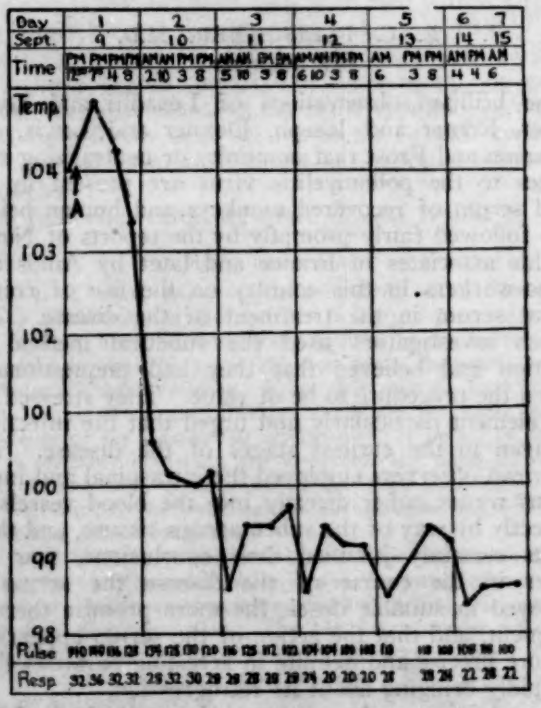

Chart 1.—Course in Case 2: *A*, 45 c.c. of convalescent serum.

Summarizing, one may state that the intramuscular injection of convalescent serum is at least theoretically a means whereby passive immunity may be achieved in a manner similar to that observed in the development of active immunity; namely, through the blood. For practical purposes it is the most logical method of administration.

REPORT OF CASES

CASE 1.—A girl, aged 3½ years, at 5 p. m., Aug. 20, 1925, complained of pain in the neck, head and left arm. She slept two hours and awakened complaining of pain in the head; she had a slight fever. August 21, she was brought to the outpatient department and examination showed that she had marked tremor, loss of grasping power in the left hand, slight rigidity of the neck and positive Kernig sign on both sides. The abdominal reflexes were present, but not active. The temperature was 100.4; the pulse, 140. Lumbar puncture was not done, on account of evident diagnosis. The child was admitted to the hospital at 2:30 p. m., and 50 c.c. of convalescent serum was given intramuscularly, twenty-two and one-half hours after the onset of the illness. August 22, eighteen and one-half hours after the administration of the serum, the temperature was normal, tremor and weakness of left hand were still present, rigidity of neck and Kernig's sign were less pronounced, and movements of the lower extremities were normal. August 23, the temperature was normal; there was some resistance in flexion of the neck and a suggestion of Kernig's sign on the right side. Tremor of left hand was very slight. The child made an uninterrupted recovery, without paralysis.

CASE 2.—A girl, aged 7, was taken ill at 6 p. m., Sept. 8, 1925, with vomiting, headache and fever. She complained during the night of pain in the abdomen and legs, and she was actively delirious. At 10 o'clock the next morning, her temperature was 104, the delirium pronounced, there was marked tremor of the left hand and incontinence of feces and urine. The abdominal reflexes were not obtainable. The knee jerks were diminished, and there was marked rigidity of the neck and profound toxemia. She was admitted to the hospital at 12:30 p. m., eighteen and one-half hours after the onset of her illness. Lumbar puncture was not done, on account of the evident diagnosis. The patient was given 45 c.c. of convalescent serum intramuscularly. At 8 p. m., seven and one-half hours later, the temperature was 102.4. September 10, ten hours after administration of the serum, the temperature was 100 rectally, the patient was conscious and rational, there was slight rigidity of the neck and the tremor had disappeared. The knee jerks and Achilles jerks were diminished. September 11, the temperature was normal and the pulse rapid. It was difficult to elicit the knee jerks. The examination was otherwise negative. September 14, a neurologic examination revealed a normal child.

CASE 3.—A boy, aged 5½ years, Sept. 11, 1925, at 4 p. m., four hours before being seen, complained of being chilly, developed looseness of the bowels, described a sensation in the lower part of the back as if needles were sticking into the skin, and complained of headache, particularly when the top of his head was touched. The temperature was 101.8, which rose in three hours to 103.8. The boy looked ill; he was conscious and reacted promptly to external stimuli. There was no rigidity of the neck. The tongue protruded slightly to the left. Only a left upper abdominal reflex could be obtained on first examination; subsequently all reflexes were absent. The knee jerks were active. The patient had frequent diarrheal stools and complained of severe abdominal pain. There was an absolutely definite history of exposure for a period of two hours to a frank case of poliomyelitis, four days previously. Lumbar puncture was not done. September 12, at 2 a. m., 40 c.c. of fresh convalescent serum was injected intramuscularly, ten hours after onset. Ten hours

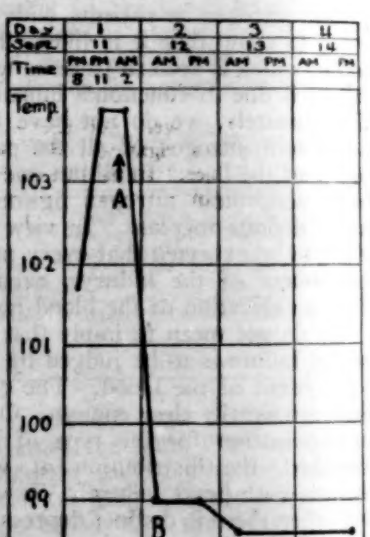

Chart 2.—Course in Case 3: *A*, 40 c.c. of convalescent serum; *B*, pulse, 120; respiration, 30.

after the administration of the serum, the temperature was normal and remained normal, although the pulse and respirations continued rapid for forty-eight hours and the bowel movements frequent for about seventy-two hours. September 15, four days after onset, the abdominal reflexes were still absent, but the child was otherwise normal. September 28, the left upper abdominal reflex returned; the others are still absent.

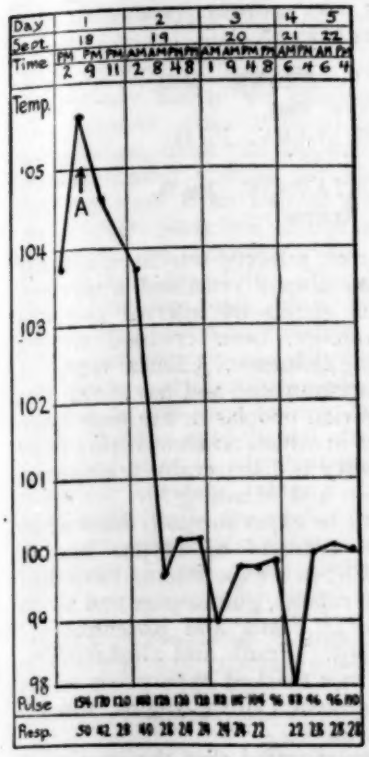

Chart 3.—Course in Case 4; *A*, 92 c.c. of convalescent blood.

CASE 4.—A boy, aged 5 years, Sept. 18, 1925, at 7 a. m., complained of severe headache, chilliness, and pain in the right lumbar region and in the left arm and the right leg. A severe diarrhea developed during the day, and the child vomited five times. Examination at 2 p. m., seven hours after the onset, showed a temperature of 103.8, knee jerks absent on both sides, slight rigidity of the neck, marked tremor of all the extremities, and profound delirium. Lumbar puncture showed 62 cells, mostly mononuclears. A diagnosis of fulminating poliomyelitis was made. The child was admitted to the hospital at 9 p. m., fourteen hours after onset. The temperature was 105.6; pulse, 154, and respiration, 50. The patient was extremely toxic, and a jerking tremor, particularly of the hands and arms, was discernible in all the voluntary muscles, including those of the eyelids, mouth, abdomen and lower extremities. He was semiconscious and did not cooperate, although he made a weak attempt at gripping hands. The pupils were sluggish to light. The abdominal reflexes were not elicited; there was a bilateral Kernig's sign, neck rigidity, and a positive Brudzinsky sign. The patient's general appearance suggested the most fulminating type of poliomyelitis, with death almost a certainty. Convalescent serum was not available. At 9 p. m., about fifteen hours after the onset, 92 c.c. of convalescent citrated blood was injected into the buttocks, in order to avoid delay incidental to procuring the serum. While this was being given, the extreme intoxication was manifested by repeated involuntary defecation and urination. At 10:45 p. m., one and three-fourths hours after injection, the temperature was 104.6; pulse, 160; respiration, 42. September 19, at 2 a. m., five hours after injection, the temperature was 103.6; pulse, 170; respiration, 42. Nine hours after injection, the temperature was 101; pulse, 140; respiration, 40; eleven hours after injection, the temperature was 99.8; pulse, 120; respiration, 28. The temperature remained normal throughout the day and never rose afterward above 100 rectally. The patient had twelve stools during the twenty-four hours and vomited five times; otherwise he was perfectly rational and feeling comfortable in every way. On examination, the child seemed very quiet, was not toxic looking, was rational, and cooperated. The knee jerks were present, but diminished. The abdominal reflexes were elicited. Nuchal rigidity was still quite marked. There were slight Kernig's signs on both sides. September 20, at 10 a. m., the patient complained of severe abdominal pain; he had two loose bowel movements during the day, but there was no vomiting. He seemed more listless and knee jerks were present, but diminished, and equal on the two sides. There was no paralysis. The following day he complained of some pain in the lower extremities; his neck was slightly rigid and tender, and the knee jerks were active. September 22, the patient was bright and conversative; he complained of some pain in the lower extremities. Reflexes were active, and tenderness in the nuchal region was much less marked. September 25, the patient was practically normal, on neurologic examination.

CASE 5.—A girl, aged 19, at 6 p. m., Sept. 24, 1925, had a large watery evacuation of the bowels. The next day the bowel movements had become very frequent, contained blood and mucus, and were associated with marked abdominal pain. She complained of profound dizziness, severe headache and pain in the back. At 7 p. m., the patient's temperature was 102.5; pulse, 80, and respiration, 20. She was acutely ill and toxic looking, and had a violent chill lasting two hours. The patient also complained of severe abdominal colic and pain in the head, shooting down into the back and thighs. There was general cutaneous hyperesthesia, no weakness or rigidity of the extremities, and a slight suggestion of a bilateral Kernig's sign. The reflexes all were hyperactive, except the radials and biceps, which were sluggish. The neck was not rigid. At 8 p. m., the temperature was 102.8 and the pulse 124. The patient was quite delirious at times, although rational at intervals. By 9 p. m., the reflexes were hyperactive, and there was a definite bilateral Kernig's sign and a slight neck rigidity. At 10 p. m. there was an increasing headache, very severe pain in the back and thighs, occasional spasmodic contraction of the muscles of the back and slight opisthotonos, numbness of both hands, a feeling as if the left hand were paralyzed, occasional fine tremor of the hand, and definite extensor weakness of the left wrist. At 10:30, there was a suggestion of muscle weakness in the right eye, the reflexes were profoundly exaggerated, and there was a Kernig's sign on both sides. The temperature was 104, and the patient was actively delirious. Lumbar puncture showed 25 cells, 88 per cent.

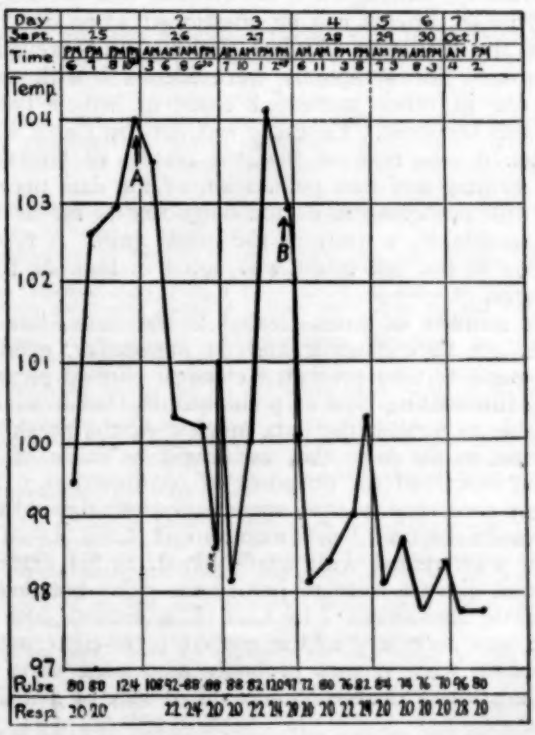

Chart 4.—Course in Case 5; *A*, 50 c.c. of convalescent serum; *B*, 70 c.c. of convalescent serum.

lymphocytes, and 12 polymorphonuclears. At 11 p. m., five hours after the onset of symptoms, the patient was given 50 c.c. of convalescent serum intramuscularly. September 26, at 3 a. m., the temperature was 103.4 and the pulse 92. At 8 a. m. the temperature was 100.2 and the pulse 88. Severe headache persisted, but the patient was quite rational and comfortable. There were no more bowel movements, and

Kernig's sign was less marked. At 8:30 a. m., about nine and one-half hours after the administration of the serum, the temperature was 99. The patient was comfortable all day, with only a slight headache and backache. There was no repetition of the frequent bowel movements, but the temperature rose to 101 at 6:30 p. m. On the morning of September 27, the temperature was normal. Pain in the abdomen became suddenly severe, with three very loose bowel movements. The patient vomited twice and complained that headache and backache had again become very pronounced. She was very toxic looking, and there was a marked tenderness in the nuchal region, with slight rigidity on extreme flexion. The patient complained of pain in the lower extremities, when endeavoring to elicit the Kernig phenomenon, although the reaction was not distinctly positive. At 1 p. m., she had a slight chill followed by a rise in temperature to 104.2; the pulse was 120; the respiration, 24. At 4:30, 70 c.c. of convalescent serum was given intramuscularly, and at 6 the temperature was 101.8; pulse 96 and respiration, 20. At 11:30 p. m., the temperature was 100.2; the pulse, 90, and respiration, 20. September 28, at 8 a. m., fifteen and a half hours after administration of the serum, the temperature was 98.2. It remained normal all day. Headache, backache and numbness in the extremities practically disappeared; abdominal pain was not present, and diarrhea had ceased. The next day the patient was apparently normal, and October 1, no abnormal signs or symptoms were present. The patient is making an uninterrupted recovery.

COMMENT

Lumbar punctures were not done in Cases 1, 2 and 3, because the diagnosis seemed perfectly evident at the time of examination, and intrathecal therapy was not under consideration. It is perhaps lamentable, in view of the results, that the spinal fluid findings are not available, although it is not credible that the diagnosis in these patients can be questioned when one considers the histories, physical findings and prevailing epidemic. The symptoms were identical with those observed in other untreated cases in which typical paralyses occurred. Puncture was done in Cases 4 and 5 when it was realized that the results of treatment were striking and that publication of the data necessitated full confirmation of the diagnosis as far as this was possible, by a study of the spinal fluid. A typical increase in the cell count was noted in both of these instances.

The number of cases treated is not large, but the results are so consistent and so impressive, even in those patients who presented classical clinical pictures of the fulminating type of poliomyelitis, that it seemed advisable to publish the data in view of the prevailing epidemic, in the hope that use might be made of the method described for purposes of confirmation. It is scarcely necessary to enter more fully into the individual results beyond brief mention of Case 4. This patient was treated with whole blood, as his extreme condition did not seem to justify the delay entailed in separating the serum. In Case 5, a second dose of serum was necessary at the end of forty-eight hours, on account of a relapse probably associated with too small a primary dosage on account of lack of available serum.

Further comment is not essential because a consideration of the case histories and a study of the charts reveal in a lucid manner the character of the material and the effect of treatment. Realizing the danger and difficulty of drawing radical conclusions from so small a material, it seems sufficiently conservative and justifiable to conclude that the evidence indicates that preparalytic cases of poliomyelitis, even when presumably of the malignant or fulminating type, can be cured by intramuscular injections of fresh convalescent serum, if it is administered in adequately large doses at a sufficiently early period of the disease.

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THE FEMALE SEX HORMONE

II. AN ANALYSIS OF FACTORS PRODUCING PUBERTY *

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Why, in a given species, puberty sets in at a fairly fixed period of time has always remained a mystery. In recent years various glands of internal secretion have, without real evidence, been credited with a restraining or accelerating influence. Clinical record of premature puberty has accumulated and has shown that pineal, suprarenal or ovarian neoplasms are most often causative, although cases in which no abnormality other than the precocious puberty is discoverable are also not unusual (Lenz;[1] Reuben and Manning[2]).

Premature puberty can be experimentally induced by the injection of lipoid extracts of corpus luteum, placenta or follicle fluid. Such experiments have been performed since 1913 on rabbits, guinea-pigs and albino rats (Aschner;[3] Fellner;[4] Frank and Rosenbloom;[5] Frank;[6] Allen and Doisy;[7] Frank and Gustavson[8]). The effect shows itself in a marked hyperplasia of the female genital tubular system (vulva, vagina, uterus) and mammae.

Long and Evans[9] demonstrated that the ovaries of immature white rats when successfully transplanted into adult rats at once began to function (ovulation). This behavior would indicate the absence of some factor necessary for the development of puberty or the presence in the immature of some restraining factor.

Allen and Doisy,[7] employing follicle fluid or lipoid extracts of it, in the course of three days induced pubertas praecox in immature albino rats. This species is especially suitable as, at the age of puberty, the closed and solid lower third of the vaginal tract opens by canalization, and the vaginal smear, at the time of each estrus, consists exclusively of squamous epithelial cells.

The present investigation was undertaken to determine, on the one hand, whether restraining influences were at work, or, on the other, whether absence of the female sex hormone [8] was at fault.

As by previous investigation [8] we had convinced ourselves that follicular, corpus luteum and placental lipoids are physiologically identical, we used the female sex hormone obtained from human placenta exclusively. Young, immature rats from the same litter were

* From the Research Department, National Jewish Hospital for Consumptives, Denver; the Department of Anatomy, University of Colorado School of Medicine, and the Chemical Laboratory, Denver University.

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2. Manning, G. R., and Reuben, M. S.: Precocious Puberty, Arch. Pediat. **39**: 769 (Dec.) 1922.
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7. Allen, Edgar; and Doisy, E. A.: Am. J. Physiol. **69**: 577-588 (Aug.) 1924.
8. Frank, R. T., and Gustavson, R. G.: Female Sex Hormone and Gestational Gland, J. A. M. A. **84**: 1715 (June 6) 1925.
9. Long, J. A., and Evans, H. M.: The Oestrous Cycle in the Rat, Mem. Univ. California **6**: 98, 1922.

employed. After from three to five days of injection, the vaginal canal opened and the vaginal smear proved characteristic of estrus. The smear could be kept positive for from eight to nine days at least, by continuing the injections.

At the time at which artificial premature puberty is reached, the ovaries of the experimental animals do not differ in any way from those of the untreated controls. The ovaries show no fully maturing follicles, but only follicles undergoing atresia before full maturation is reached. The puberty effect induced is therefore entirely due to the exhibited extracts.

If, however, after artificial premature puberty has been attained, these rats are watched further, it will be noted that, after a latent period of from five to seven days (at least from two to three weeks before the control sisters show this change), spontaneous ovulation may occur and recurring cycles appear every four to six days, as in the adults. The ovaries of these animals contain corpora lutea, thus demonstrating that the ovaries have begun to function.

These experiments not only indicate that puberty can be accelerated artificially by injection of the female sex hormone, as has been known, but also that as soon as the threshold is once passed, the ovaries, which appear to respond more slowly than the tubular system to the female sex hormone (after a short latent period) can function just as in the adult. No evidence of stimulation of ovogenesis and the new formation of ova could be obtained, even after continued injection of the hormone (up to twelve days).

TABLE 1.—*Production of Artificial Premature Puberty in Rats, Following Injections of the Female Sex Hormone*

Rat	Age at Beginning	No. of Injections	No. of Days Injected	No. Days Until Vagina Opened and Smear Positive	Ovarian Cycle Began at Age of Days	Comment
1A	25	17	9	5	..	Killed, 33 days old
2A	25	24	12	4	..	Killed, 37 days, smear positive throughout
3A	25	6	3	3	35	
4A	25	6	3	5	..	Killed, 29 days old
5A	25	Control	..	..	..	Killed, 29 days old
6A	25	Control	..	..	..	Killed, 36 days old
7A	25	Control	..	45	45	
12A	24	5	3	3	34	Killed after second cycle; corpora lutea present
13A	24	5	3	3	35	
15A	24	5	3	3	34	
14A	24	Control	..	55	55	
16A	22	5	3	3	34	
17A	22	Control	..	52	52	

SUMMARY

1. Injection of the female sex hormone into immature female white rats in from three to five days causes opening of the canal and estrual phenomena (pubertas praecox), without the occurrence of ovulation.

2. After a further interval of from five to seven days, the artificially produced puberty may be followed by spontaneous, regular cyclical phenomena consequent to follicle ripening and ovulation.

3. If the threshold of puberty is once crossed, sexual maturity may be maintained spontaneously in immature rats.

4. These findings indicate that puberty results from the elaboration, in sufficient amount, of the female sex hormone, and that the advent of puberty is not due to the removal of an inhibitory influence, such as might be exerted by one or more of the glands of internal secretion, such as the thymus or the pineal.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

PARA-THOR-MONE-LILLY. — Parathyroid Extract-Collip.—A stable, aqueous solution containing the active principle or principles of the parathyroid gland of cattle and having the property of relieving the symptoms of parathyroid tetany and of increasing the calcium content of blood serum. It is standardized by its capacity to increase the blood serum calcium in normal dogs: one unit being defined as one one-hundredth of the amount of solution required to cause an increase of 0.005 Gm. of calcium (Ca) in the blood serum of a twenty kilogram dog, the increase in calcium being determined fifteen hours following the injection of the solution.

Actions and Uses.—Para-Thor-Mone-Lilly relieves the tetany of parathyroidectomized dogs and by its continued daily administration in small doses further attacks can be prevented. Experiments with animals show, however, that frequently repeated small doses are cumulative and may raise the blood serum calcium to dangerous levels. It must be recognized that para-thor-mone-Lilly is a most potent therapeutic agent and that its use may be attended with great danger unless due precautions are taken to avoid overdosage and the consequent development of hypercalcemia.

Para-Thor-Mone-Lilly is claimed to be a specific in tetania parathyreopriva and to have relieved acute and chronic tetany following thyroidectomy, so-called idiopathic tetany, and infantile tetany. The experimental clinical use of para-thor-mone-Lilly in conditions believed to be due to a low calcium content of the blood serum must be carried out with extreme caution.

Dosage.—In cases of true tetany where all the classical symptoms are fully developed, twenty to thirty units of para-thor-mone-Lilly may be administered. In severe cases, if necessary, this dose may be repeated two or three times within the first twenty-four hours, and the dosage then diminished as indicated by the condition of the patient. Doses ranging from ten to twenty-five units daily have been found sufficient to prevent the recurrence of tetany in chronic cases.

Para-Thor-Mone-Lilly may be administered subcutaneously, intramuscularly or intravenously.

Manufactured by Eli Lilly & Co., Indianapolis, under license from the University of Alberta. Patent and trademark applied for.

Para-Thor-Mone-Lilly, P-20, 5 Cc.: Each Cc. contains 20 units.

Fresh parathyroid glands of animals from which fat and connective tissue have been removed are ground and extracted with a hot acidified solution. After maceration for five hours, the glands are separated and again extracted with a hot acidified solution. The united extractions are cooled and the separated fat is removed. Alkali is added to neutralize the liquid, and the precipitate which forms at the neutral point is removed by filtration and dissolved in acidified water (p_H 2.5). The hydrogen ion concentration of the solution is then adjusted to approximately p_H 7 and the precipitate is again formed. This precipitate is dissolved in slightly acidified water, diluted approximately to the desired potency, filtered through a Berkefeld filter and submitted to standardization and sterility tests.

To determine blood serum calcium 10 Cc. glass syringes are cleaned in a hot solution of potassium dichromate and sulphuric acid (800 Cc. of concentrated sulphuric acid to 200 Cc. of a saturated solution of potassium dichromate in distilled water). Then after repeated rinsings in distilled water, the syringes are placed in the hot air oven until thoroughly dry. The needles are cleaned in dilute sulphuric acid, washed with distilled water and dried in the oven. Before bleeding, all syringes are examined carefully to ascertain that no moisture remains. As blood containers, 15 Cc. graduated Pyrex centrifuge tubes are used. These are cleaned in the same manner as the syringes in the dichromate cleaning mixture. These also must be thoroughly dry. About 10 Cc. of blood is drawn and is transferred to one of the clean, dry centrifuge tubes. The tube of blood is centrifuged at once. Two Cc. of the clear serum are added to 2 Cc. of distilled water in one of the 15 Cc. centrifuge tubes. This is shaken until the serum and water are well mixed, then 1 Cc. of a saturated solution of ammonium oxalate is added, and the whole again well mixed. After standing exactly 30 minutes, the tube is centrifuged at about 2,000 revolutions per minute for 10 minutes. Then the supernatant fluid is poured off. The rim of the tube is wiped dry, and inverted on a filter paper. It should drain in this manner for at least five minutes, and the mouth of the tube again dried. Three Cc. of ammonia water (2 Cc. of stronger ammonia water made up to 100 Cc. with distilled water) are directed upon the precipitate by a fine spray from a wash bottle so as to loosen the precipitate. The tube is now centrifuged and drained as before. To the precipitate of calcium oxalate are now added 2 Cc. of normal sulphuric acid, and the tube heated in boiling water until the precipitate is dissolved. The oxalic acid liberated is now titrated with freshly standardized one-hundredth normal potassium permanganate.

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SATURDAY, NOVEMBER 14, 1925

VACCINATION FACTS

The propaganda for the public health cannot afford to overlook any evidence of the success of preventive medicine. The cultists that profit by opposing preventive medicine and the misguided sentimentalists of the antivaccinationist and antivivisectionist types are constantly alert to attack present-day practical hygiene. So long as published statements are accepted uncritically at face value, regardless of their authorship, by a large part of the public, it becomes important that the facts of modern medicine be circulated as freely and widely as are the pronouncements of the nonmedical healing cults. In the battle for what is best, the most effective weapon usually is the dissemination of truth.

The value of vaccination as a preventive of smallpox is so firmly established that it should not require mention, let alone defense. The physician and the public health official are not infrequently called on, however, to act as protagonists in the promotion of vaccination. New and telling facts are available in recently published statistics from California. According to the university physician,[1] there has been no case of smallpox among the students of the University of California at Berkeley since 1907, when the regents adopted the rule that all entrants must possess satisfactory evidence of immunity to smallpox before they could be admitted. This is the record of perfection in a state in which more than 9,000 cases of smallpox were reported in 1924, making a case rate of 2.41 per thousand of population. Calculated on the student population at the university, twenty-four cases were to have been expected, if vaccination had not been enforced. There were, in fact, cases of smallpox among unvaccinated employees, while all students were absolutely protected during a local epidemic in 1913.

Legge[1] notes that the colleges of Massachusetts and New York have no record of smallpox. Both of these states have laws providing for the vaccination of school children, which again demonstrates the protection afforded by this public health measure. With this, we may contrast the situation in Utah, where health and school authorities are prohibited from excluding unvaccinated pupils from school or from requiring the vaccination of any person in the community. The University of Utah had a serious smallpox epidemic in 1922.

Eternal vigilance seems to be the price of many valued possessions. The unimpeachable good record of the policy of vaccination must be safeguarded against error. The United States Public Health Service[2] has reported eleven recent cases of postvaccinal tetanus, not due to any contamination of the vaccine but to the use of bunion pads as a vaccination dressing. In view of the fact that 25 per cent. of one lot of these glue-coated felt rings showed the presence of tetanus organisms, the menace of the undesirable practice is obvious.

Physicians who value the blessing of smallpox vaccination should make every effort to prevent the use of improper methods of dressing.

1. Legge, R. T.: Status of Vaccination in American Colleges, Pub. Health Rep. 40: 1037 (May 22) 1925.

ALCOHOL—PURE AND IMPURE

The surreptitious production and distribution of alcoholic beverages have brought about the possibility of the consumption of improperly refined distillates obtained from crude sorts of fermentations. The drinking of "bootleg" liquor may lead to the ingestion of substances of unknown chemical composition and physiologic action, in addition to the inevitable ethyl alcohol. The "alcohol question" of today has thus become, from a medical standpoint, even more complex than it was in the preprohibition period.

In the discussions of the pathology of alcoholism, some of the organs of the body seem to have received comparatively little attention. The well known British report[3] of the Advisory Committee of the Central Control Board points out that the way in which alcohol acts in chronic alcoholism is complex. According to these foreign authorities, its injurious effects are only partially the direct result of the drug entering the system; they are largely brought about through its detrimental action on the lining membrane of the stomach and bowel, causing chronic inflammation and failure in the action of the digestive juices, and so promoting the absorption from the alimentary canal of poisonous matters (digestive and microbial toxins, as they are termed), which, in healthy conditions of the mucous membrane would be formed in lesser amount, if at all, and would certainly not be allowed to pass so freely into the system. According to the British report, it is indeed a question whether many of

2. Armstrong, C.: Tetanus in the United States Following the Use of Bunion Pads as a Vaccination Dressing, Pub. Health Rep. 40: 1351 (June 26) 1925.

3. Alcohol: Its Action on the Human Organism, London, H. M. Stationery Office, 1918.

the morbid changes that occur in other organs in the course of chronic alcoholism may not really be secondary to these local disorders in the gastro-intestinal tract.

Studies that MacNider[4] has completed at the University of North Carolina indicate that ethyl alcohol in the doses administered by him over a period of weeks to animals is only slightly nephrotoxic. Naturally nephropathic animals are more susceptible to the toxic effect of the same amount of alcohol than are normal individuals of the same species. However, when the latter are given, instead of pure alcohol, an alcoholic distillate obtained without refining from a fermented mixture of cereal products, there develops evidence of its nephrotoxic action, which is shown functionally by a pronounced albuminuria. In nephropathic animals, the effect is even more pronounced. Associated with a reduction in urine formation occurs a decrease in the elimination of phenolsulphonephthalein, a retention of nonprotein nitrogen in the blood and a reduction of its alkali reserve. Fatty changes arise in the glomerular vessels, and the tubular epithelium also may show evidence of injury. The toxicity of the unrefined "distillates" from fermented mixtures is not primarily due to their content of ethyl alcohol but to some undetermined substance. Ethyl alcohol is assuredly not entirely guiltless of pronounced potencies, when its dosage exceeds a debated minimum in the body. It may even be debated whether there is any "minimum" that represents a zone of safety for the consumer. Whatever the answer may be, purified ethyl alcohol should not be held responsible for the insidious harm that even small quantities of undesired accompaniments in crude distillates may bring about.

4. MacNider, W. deB.: A Preliminary Paper Concerning the Toxic Effect of Certain Alcoholic Beverages for the Kidney of Normal and Naturally Nephropathic Dogs, J. Pharmacol. & Exper. Therap. **26**: 97 (Sept.) 1925.

VIEWS IN THE STUDY OF CANCER

Cancer has been described as one of the strangest and apparently most lawless of vital phenomena. Considerations of this sort help to explain why the study of its problems has attracted so many investigators throughout the world, regardless of the practical aspects of the subject. On the other hand, the picture of "helpless beings harboring unwillingly a rapacious object, which eats its way through tissues and saps vitality until death brings the inevitable end," has doubtless been the foremost reason for the flow of liberal financial aid into the coffers of cancer research in many lands. During the past summer there has been a recrudescence of popular enthusiasm and an awakening of hopes by the widely acclaimed "discovery" of the cause of cancer. The prominent features of this investigation, which doubtless suffered some undeserved distortion by an inadvisable publicity, have already been discussed in THE JOURNAL.[1] The theory advanced included two items that were of themselves likely to win immediate favor: there was the prospect of a culpable micro-organism, always a "popular" hypothesis in the etiology of disease in the past generation; and this was supplemented by the cooperation of an unidentified chemical substance—a reminder of vague biologic potencies such as have been expressed by the terms hormone, vitamin, enzymes and trephones.

Outbursts of enthusiasm for new findings in science are the excusable reactions of ardent investigators. They give zest to the search for truth; they help to sustain the energy of the worker. To the latter little harm is likely to result from the optimistic outlook of a colleague, for he has presumably learned to inspect new data with judgment and to use caution in interpreting them. It is rather the untutored person who does not know how to evaluate new announcements; consequently, he may experience an awakening of false hopes. And it is the quack who quickly attempts to profit by the promise of new attacks on disease; for he is prone to capitalize misfortune.

One of the means of cultivating a sane outlook on the debated fields of medicine is to secure clear points of view in many directions; to survey the possibilities with an adequate appreciation of the varied avenues of approach. This is particularly true in cancer research, in which there are many facts and many conflicts. If one group of observers points vigorously to the environment of the aberrant cells as the cause of their disorderly behavior, whether it be a micro-organism, a chemical substance, or a deficiency that constitutes its abnormality, one should recall that others have regarded the cancer cell as primarily present in the body and inherently parasitic—a differentiated cell bound on a work of destruction if by any chance it is released from its normal inhibitions. It is corrective to appreciate that malignant tumors may or may not contain micro-organisms; and that the development of neoplasms has been initiated by such varied agencies as tar, radium, the roentgen rays and animal parasites. A realization of this seeming diversity of etiologic sequences exerts a sobering influence.

As cancer is a manifestation of growing cells, it may be helpful to consider critically the ordinary biologic experiences of the body's smallest structural units. When the organism becomes well developed it largely ceases to acquire new tissue. As Lee has expressed it, the period of active cell growth and division has nearly come to an end; the existing cells have learned what they are to do, and the real business of one's physical life proceeds according to law and system. Presently cell division and growth may start

1. The Cause of Cancer, London Letter, J. A. M. A. **85**: 368 (Aug. 1) 1925; The Latest Cancer Parasite, editorial, ibid. **85**: 438 (Aug. 8) 1925.

anew; "it is unbridled, rapid, often tumultuous, and it rudely interrupts the orderly processes of life."

As one of the many contributions to the understanding of the genesis of tumors, Burrows [2] and his co-workers at St. Louis have pictured the change as a disturbance in the balance between growth and function in the body units. As they point out, the organism is a mass of cells. It has come about through a definitely regulated growth of the egg cell and the formation of the different types of cells. It matures and functions through a gradual change in the cells, so that they use their energy for function rather than for growth. This organism maintains itself for a given period of time in that enough energy is used for growth to take care of the destruction suffered by the cells in their function. According to Burrows and Johnston, however, there has never been any evidence that the functioning body cells may not under the proper conditions utilize their entire energy for growth. It is evident that in such a colony of cells as the body of man, in which these units as a mass are using their energy for function, if one cell breaks away from the conditions that force it to function and acquires the property of independent growth, it must soon destroy its neighbors weakened by their functional burdens.

The foregoing is, of course, merely a restatement of the view of one school of cancer research which holds that the irrepressible growing cell is derivable from any tissue cell, rather than the sudden development of some repressed embryonic rest. The cancer cell is thus not primarily different from the normal cell. The problem is to explain the active independent growth of body cells. Burrows believes that it depends on a crowding of the cells together in a stagnant area or an area having a relatively poor blood supply. Foreign agents, including bacteria that induce cancer, act by promoting the formation of dense cellular masses.

The special claim of the hypothesis advanced by Burrows is that the factors of stagnation and cell crowding become important for growth because the growth of body cells depends on a certain concentration of a primary product of the oxidation of the cells, the "archusia," or driving substance of the cell. Ordinarily this is withdrawn into the blood. When it accumulates, cells begin to grow. Function, as Burrows expresses it, is something that exists only in an environment that inhibits an independent growth. It occurs only in a richly vascularized tissue. Any tissue, he adds, may be made cancerous by anything that frees the cells of the effect of their intercellular substances and an active circulation of blood. These are, let it be clearly emphasized, only views, but they enable one to envisage many aspects of the problem and unite them into one of many synthetic pictures.

2. Burrows, M. T., and Johnston, C. G.: The Action of Oils in the Production of Tumors, Arch. Int. Med. 36: 293 (Sept.) 1925.

Current Comment

HEATING AND RESPIRATORY DISEASE

Among the various panaceas that have been proposed for prevention of respiratory disease are nasal operations, tonsillectomy, radical tooth extraction, vaccines, sprays, gargles and, during epidemics, the wearing of masks. Ventilation and heating have demanded their share of interest, and two recent writers emphasize this phase of the problem. From a dependable source in Boston comes the assertion that the maintenance of a normal respiratory mucous membrane in the hot dry air customary to our houses and offices is impossible. "It would do no harm," says the author, "to remind parents that their children's tonsils would give no more trouble in winter than in summer, and might not have to be ripped out, if the child were given air fit to breathe." Just as American heating has been condemned, English heating methods—or the lack of them—have been praised. This is, in part, the view taken by Hubbard.[1] If the average temperature of American houses is too high, their humidity too low, and Americans unhealthy as a consequence, it is argued, obviously Englishmen, whose houses are not overheated and the air in them not dried out, should show a better health record. Strictly speaking, facts on which to determine this point are unavailable, for respiratory diseases in their milder forms are not reportable. Deaths, however, are recorded, and the inferences drawn from comparative mortality statistics for 1921 are rather unexpected. In 1921 the combined death rate per hundred thousand from whooping cough, diphtheria, influenza, pneumonia and an unclassified group of other respiratory diseases (tuberculosis excepted), was: United States, 136.4; England and Wales, 155.09. If tuberculosis of the respiratory system and bronchitis are included, the result is: United States, 231.4; England and Wales, 332.4. Authors who stress the importance of correct temperature and humidity in relation to the prevention of respiratory disease are no doubt warranted in their assertions, but it would seem to be unwise, in the light of our present knowledge, to attach too much importance to any single etiologic factor.

HUMAN TEARS

Man is unique in more ways than one. The poet has referred to the significance of our "footprints on the sands of time." Less idealistic laymen occasionally observe the thumb-prints of their fellow men; and surprising are the identifications and discoveries that have been made thereby. Our blood carries within its chemical self the proof of its species identity, and it may betray even closer human relationships. In lesser degree the evidence of such identity is present in other body fluids, in milk and in muscle. Our "flesh and blood" thus literally bear the stamp of a common, yet independent, origin. And now we are assured that even the tears tell a similar story. At any rate, it has

1. Hubbard, Thomas: Hot Air Comfort, J. A. M. A. 85: 1022 (Oct. 3) 1925.

been demonstrated[1] that in the human lacrimal secretion there is a protein which, when tested by immunologic methods, seems to be common to all samples of human tears, but is different from that of the tears of other animals. It also appears to be different immunologically from the human blood proteins and those of other secretions and tissues. Our tears may be more than the expression of joy or sorrow; for with them goes forth the special chemical imprint of their human origin.

HEART DISEASE

Dyspnea, edema and sleeplessness, with a hopeless attitude on the part of the patient, his family and his physician, make up the picture of advanced heart disease. Fully as distressing, in a slightly different way, are the conditions surrounding cardiac decompensation in nearly any stage. Fifty per cent. of the cases occur in persons who should be in the prime of life,[2] with earning capacity and family expenses both at their highest. As a result of heart disease, all of those afflicted are partially or wholly disabled, and the families of a third of them are partially or wholly dependent on charity. McLean[3] suggests, in the first number of the new periodical devoted to diseases of the heart, "Let us learn the lesson taught by the tuberculosis campaign, that we have not materially lessened the number of tubercle bacilli, but have lessened the fields on which they could grow." He would prevent heart disease through increasing resistance to communicable illnesses—the frequent precursors of cardiac disease. School children would be the beneficiaries of his campaign by yearly examination of all pupils between the ages of 6 and 12, first, to discover defects; secondly, to note the results of efforts at correction. "The tuberculosis campaign took twenty years," he says, and he prophesies optimistically that "the heart disease campaign will probably not take quite so long."

RICKETTSIASIS

The rôle of insects as vectors of disease for both man and animals has been clearly established, although practically nothing was known about it forty years ago. The arthropods act not only as mechanical carriers of disease germs but also as intermediate hosts. Mites, ticks, lice, bugs, mosquitoes, flies, fleas and their ilk have been incriminated at one time or another. Since Manson, in 1879, proved that insects, in the case of *Filaria* and the mosquito, are the immediate hosts of human parasites, many important diseases have been shown not only to be transmitted by arthropods but to be exclusively transmitted by certain species. The names of the maladies have become increasingly numerous; and the general mode of transmission of the infections has in many cases been definitely ascertained before the etiologic micro-organism was definitely established. Of late, considerable attention has been focused on certain organisms of minute size that have been designated as Rickettsiae. Their relationships are still rather obscure, but they are evidently concerned with Rocky Mountain spotted fever, typhus fever and trench fever. To these the studies of Cowdry[1] in South Africa have added heartwater, a specific febrile disease affecting sheep, goats and cattle there. This, as Cowdry points out, will enlarge our conception of the scope of the pathogenicity of these micro-organisms by the inclusion of a disease of domestic animals that never is found in man. The bringing of new diseases under the general heading of "rickettsiosis" suggests to Cowdry the likelihood that the limitations of this group have not yet been established and that other febrile diseases of unknown etiology, which are insect-transmitted, may eventually be found to fall in the same category. How fitting that the general designation should perpetuate the name Ricketts, a martyr to the cause of science in the investigation of insect-borne diseases.

REDUCTION OF TAX ON PHYSICIANS UNDER HARRISON LAW

On November 10, the Ways and Means Committee of the House of Representatives approved a reduction from $3 to $1 of the tax levied on physicians under the Harrison Narcotic Law. When a beneficent government decided to make the medical profession bear a part of the burden of the enforcement of the Harrison Narcotic Act through assessing physicians the sum of $1 in registering them under the act, the burden was assumed without complaint. When legislators who are charged with providing the government with funds sufficient to conduct its activities concluded that two additional dollars might be added as a war measure, the medical profession cheerfully accepted this additional burden. But when the war taxes were otherwise reduced and the tax of $3 was continued, perhaps as a simple method of increasing revenue, our profession revolted. It seemed sufficient for physicians to assume the task of keeping endless personal records without having to pay as well for the keeping of records in Washington. In THE JOURNAL, Feb. 17, 1923, appeared an editorial comment protesting against this additional tax, particularly as it was shown that by the additional assessment the United States actually reaped a profit on the traffic in narcotic drugs. Again in 1924, THE JOURNAL, in its consideration of the recommendations submitted by Secretary Mellon, protested against the lack of any specific provision for a reduction in this indefensible tax. Regardless of these protests, the Commissioner of Internal Revenue attempted, on several occasions, to justify this tax. In THE JOURNAL, Dec. 10, 1924, it was pointed out that the government had again profited by several hundred thousands of dollars from this tax. The House of Delegates, at the annual session of the American Medical Association held in Atlantic City last May, again urged the Board of Trustees to do

1. Fleming, A., and Allison, V. D.: On the Specificity of the Protein of Human Tears, Brit. J. Path. **6**: 87 (April) 1925.
2. Carr, J. G.: The Economic Phases of Cardiac Disease, Am. Heart J. **1**: 62 (Oct.) 1925.
3. McLean, J. D.: An Official Method for Lessening Heart Disease, Am. Heart J. **1**: 107 (Oct.) 1925.

1. Cowdry, E. V.: Studies on the Etiology of Heartwater, I. Observations of a Rickettsia, Rickettsia Ruminantium (n. sp.) in the Tissues of Infected Animals, J. Exper. Med. **42**: 231 (Aug.) 1925; II, Rickettsia Ruminantium (n. sp.) in the Tissues of Ticks Transmitting Disease, ibid., p. 253.

all in its power to reduce this tax. Moreover, the issue of the *American Medical Association Bulletin* for June, 1925, presented a statement by Dr. W. C. Woodward, secretary of the bureau, giving the complete facts. Finally, the *American Medical Association Bulletin* for October, 1925, published the statement which the Board of Trustees, acting on instructions from the House of Delegates, had transmitted to the Secretary of the Treasury, the chairman of the Ways and Means Committee of the House of Representatives, and the chairman of the Finance Committee of the Senate. Here is clear evidence that a united medical profession, arguing a just cause, can secure eventually a satisfactory verdict.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Plague Infected Rats.—In the week ending October 3, three plague infected rats were found at Los Angeles, according to *Public Health Reports*. The number of rats trapped during the week was 2,375; of the squirrels and mice trapped, none were found to be infected. The date of the last human case of plague in Los Angeles was January 15.

Chiropractic College Sues Chiropractic Board.—The Berkeley Chiropractic College has gone to court to restrain the state board of chiropractic examiners from conducting an investigation of that institution. The president of the "college" considers, it is reported, that since no member of the board was a licensed chiropractor for three years prior to his appointment as required by law, such an investigation would be a violation of the school's rights.

Smallpox Control in Richmond.—When smallpox appeared in a public school in Richmond, October 12, the health officer notified the principal of the school that he would be on hand the following morning to exclude from attendance for twelve days every teacher and pupil who had not been successfully vaccinated. Such evidence could not be given by 595, and they were sent home; the next morning 233, who had been vaccinated in the meantime, returned to school and the next morning 160 more newly vaccinated pupils returned; eighty more vaccinated pupils returned on Friday.

New Classification in Telephone Directory.—The Southern California Telephone Company has agreed to insert in its next directory a special list in the classified section entitled "Physicians and Surgeons, Members of the Los Angeles County Medical Association." There will be a brief statement concerning the association at the head of the list, and the name, address, telephone number and specialty of those who desire this service. The council of the Los Angeles County Medical Association authorized the new classification, October 19. The cost to those who desire to have their names inserted will be 50 cents per line, monthly.

Society News.—Col. Robert E. Frith, federal prohibition administrator, Judge William M. Bowen, and Capt. Otis Sayre, head of the permit department, spoke before the Los Angeles County Medical Association, November 5, on "The Relation of the Doctor to the Eighteenth Amendment"; Dr. Steele F. Stewart on "Convalescent Care of Infantile Paralysis"; Dr. Sterling N. Pierce on "Kielland Forceps," and Dr. Meyer H. Newman on "The Maternal Hazard in Parturition."——Dr. Vittorio Putti, director, Rizzoli Institute, Bologna, Italy, will address the society as the guest of the Los Angeles Orthopedic Society during the week of November 16.

Abortionist Wanted for Murder.—A man who calls himself "Dr. W. W. Watkins" is wanted by the police of Los Angeles, according to the *Police Bulletin* of that city for October 13. The *Bulletin* states that warrants are on file for the arrest of this person charged with second degree murder on the accusation of performing a criminal operation on a 17-year-old girl. The *Bulletin* states further that this man uses a physician's certificate formerly belonging to the late Dr. W. W. Watkins. His method is to go to different cities and advertise in the papers as a specialist in women's diseases. The records of the American Medical Association show that Dr. W. W. Watkins, a reputable physician, died in 1901. In 1914 we attempted to learn something of the so-called Watkins Sanitarium at Pasco, Washington. A Pasco physician wrote at that time that the self-styled "W. W. Watkins" had originally been the stable man for the real Dr. Watkins, and that on the death of the latter stole the doctor's diploma and came to Pasco, Wash., where for some time he operated a so-called sanatorium, which was nothing more than an institution for criminal abortions. The doctor added at that time (in 1914) that "W. W. Watkins" was in the Washington state penitentiary.

COLORADO

Personal.—Dr. Frank H. Zimmerman has been appointed medical superintendent of Mount Airy Sanatorium, Denver. ——Dr. Chester H. Elliott has accepted a full-time appointment with the department of pathology of the School of Medicine of the University of Colorado.

Increase in Death Rate.—The death rate for Colorado for 1924, according to the Department of Commerce, was 1,247 per hundred thousand of population, as compared with 1,242 in 1923. The increase is accounted for largely by increases in death rates from measles, pneumonia and nephritis.

FLORIDA

Hospital News.—According to *Hospital Management*, Dr. Maurice H. Tallman, Miami, has purchased land for the erection of a $1,500,000 clinic and sixteen story hospital-hotel on Douglas Road and Coconut Grove Drive, Coral Gables.

Personal.—Dr. James B. Griffin, St. Augustine, has been appointed a member of the Florida State Board of Medical Examiners to succeed Dr. William J. Buck, Jacksonville, resigned.——Dr. Cecil Brannen has been elected city health officer of Coral Gables.

GEORGIA

Personal.—Dr. John D. Jungman, Philadelphia, has been appointed health officer of Columbus to succeed Dr. James A. Thrash, Jr., resigned, effective, November 1.

County Society Clinic.—The president of the Medical Association of Georgia, Dr. Frank K. Boland, writes in the state journal that at the clinic conducted by the Bartow County Medical Society recently at Cartersville, 763 children were examined before entering school, 106 had their tonsils removed, forty-eight had glasses fitted and twelve were found to have hookworm disease, and one tuberculosis and two trachoma. More than 400 children had teeth extracted. The "whole county" cooperated to make the clinic a success. The home of Mr. Dodd Warren was converted into a temporary hospital in which thirty-five beds and four operating tables were set up. The dentists of Bartow County cooperated with the medical society.

ILLINOIS

Smallpox in Bloomington.—An outbreak of smallpox occurred in Bloomington in which on October 29 there were more than fifty cases. The first death occurred, October 30. The city health director ordered that all public gatherings be abandoned until further notice.

Personal.—Dr. Victor H. Bassett, health officer of Savannah, Ga., has not accepted the position of health officer of the Quincy public health district.——Dr. William Jones, Aurora, was adjudged insane by a commission before Judge Hoover, October 29, it is reported, and ordered to the Elgin State Hospital.

Epidemic of Catarrhal Jaundice.—There has been for the last several weeks an "epidemic of catarrhal jaundice" at Batavia. A Fellow of the American Medical Association writes that his associate has seen about forty cases. The jaundice appears after about a week of prodromal symptoms, and in at least two cases in which the blood was examined a spirillum was found. There have been no fatalities.

Psychiatric Community Service.—The psychology department of Northwestern University will supervise a free clinic at Evanston at the old college building, south campus, for

the examination of persons mentally deficient and of cases of emotional and behavior disorders, on Thursday afternoons. It will be at the disposal of Evanston's public schools, hospitals, police department and social service agencies. The clinic will be separate from the routine of the university and will be a branch of the clinic in Chicago. Dr. Herman M. Adler, director, Institute of Juvenile Research, will cooperate in providing the service of a psychiatrist.

Chicago

Hospital News.—The North Chicago Hospital, 2551 North Clark Street, is planning a four story addition to its building. ——John E. Ransom has resigned as superintendent of the Michael Reese Dispensary.

Rush Medical Alumni Fund.—As a contribution from Rush Medical College Alumni to the development fund of the University of Chicago, a committee of physicians throughout the country has been organized, under the leadership of Dr. Ralph W. Webster, Chicago, to raise $250,000. Rush Alumni have already contributed $155,000 toward this fund. During Dr. Webster's absence in Japan with the University of Chicago baseball team, Dr. Wilber E. Post, Chicago, is in charge of the campaign.

Society News.—Dr. Edward H. Hatton, professor of pathology, Northwestern University Dental School, and special research investigator of the American Dental Association, will address the Chicago Ophthalmological Society by invitation, November 16, at the Hotel Sherman, on "The Dental Factor in the Etiology and Treatment of Iritis." Dr. Wendell C. Phillips, New York, President-Elect, and Dr. Charles W. Richardson, Washington, D. C., Trustee, of the American Medical Association, will be guests of honor at the meeting of the Chicago Laryngological and Otological Society, Hotel Sherman, November 19. Dr. George E. Shambaugh will present a statistical study of the 290 children in the Chicago public schools for the deaf and speak on "Congenital and Acquired Deafness—Partial and Total Defects, Vestibular Responses, Consanguinity as a Cause for Deafness."

INDIANA

Outbreak of Infantile Paralysis.—Following a conference of the board of health and school board of New Albany, October 27, the public schools were ordered closed on account of an outbreak of infantile paralysis in a district school near this city. An order was also issued, it is reported, against children attending other public functions in the community. At this time there had been only one case in the public schools.

IOWA

Two Hundred and Fifty Physicians Fail to Reregister.—At present more than 250 physicians in Iowa have not complied with the recent state law which requires physicians to renew their certificates annually and pay a renewal fee of $1 to practice medicine in the state. The state commissioner of health writes that he is continually receiving letters from insurance companies, the federal narcotic bureau and the federal prohibition director wanting his office to certify some physicians as being reregistered, and that this cannot be done unless a physician has paid his renewal fee. It seems possible that some physicians have failed to register on account of not knowing of the new law, although efforts have been made to reach every physician in the state (THE JOURNAL, June 27, p. 2009).

KENTUCKY

More Schools Closed on Account of Infantile Paralysis.—The Jefferson County Board of Health ordered the county public schools closed, October 26, on account of the outbreak of infantile paralysis. The Louisville schools were ordered closed several days ago. There had been reported up to October 29, according to the *Jeffersonian*, thirty-nine cases, only two of which were in the county outside of Louisville.

MASSACHUSETTS

Hospital News.—The Free Hospital for Women, Brookline, celebrated its fiftieth anniversary, November 4. Among others, Dr. W. W. Chipman, professor of gynecology and obstetrics, McGill University Faculty of Medicine, Montreal, gave an address.

Society News.—The Middlesex East District Medical Society celebrated its seventy-fifth anniversary at the Winchester Country Club, Winchester, October 21. Among others, Dr. James S. Stone, president of the Massachusetts Medical Society, gave an address.——Dr. Leo M. Davidoff addressed the Harvard Medical Society, Boston, November 10, on "With MacMillan in the Far North."

Personal.—Dr. Winfred Overholser, Boston, has been appointed to the faculty of Boston University School of Medicine to take charge of the work in psychiatry, succeeding Dr. Nathaniel Emmons Paine, who was West Newton professor of psychiatry in this school for many years.—— Dr. Eugene A. Darling, after fifteen years' service as president of the Cambridge Anti-Tuberculosis Association, requested at a recent meeting to be relieved, and Dr. H. F. Day was elected to succeed him.

Appointments at Harvard Medical School.—According to the *Boston Medical and Surgical Journal*, the following appointments were made, at the October meeting of the faculty of medicine of Harvard University:

Dr. John Ignatius Bradley, assistant in anatomy.
Dr. Lawrence Wells Sloan, assistant in anatomy.
Dr. Fei-fang Tang, research fellow in bacteriology.
Dr. James Hitchcock, assistant in medicine.
Dr. Millard Smith, assistant in medicine.
Dr. Henry S. Forbes, research fellow in neuropathology.
Dr. Henry Pinkerton, instructor in pathology.
Dr. Shields Warren, instructor in pathology.
Dr. Wyman Whittemore, instructor in surgery.
Dr. William L. McClure, alumni assistant in surgery.
Dr. William A. Rogers, assistant in surgery.
Dr. Horace K. Sowles, assistant in surgery.
Dr. Charles E. Teel, assistant in genito-urinary surgery.
Dr. Willard O. Thompson, research fellow in medicine.
Dr. Tracy J. Putnam, Arthur Tracy Cabot fellow in charge of the laboratory of surgical research.

The following reappointments were made:

Dr. Maurice Fremont-Smith, assistant in medicine.
Dr. Harry C. Solomon, instructor in neuropathology.
Dr. Donald J. MacPherson, assistant in neuropathology.
Dr. Frank Fremont-Smith, assistant in neuropathology.
Dr. William G. Lennox, research fellow in neuropathology.
Dr. George H. Binney, assistant in surgery.
Dr. Grantley W. Taylor, assistant in surgery.
Dr. Lester R. Whitaker, Arthur Tracy Cabot fellow in charge of the laboratory of surgical research.
Dr. Albert A. Hornor, assistant in tropical medicine.

MICHIGAN

Ford Hospital Abandons Flat Rate System.—The staff of the Ford Hospital, Detroit, has been officially informed, it is reported, that the flat rate system of charging for treatment has been abandoned and that hereafter charges will be made on an "income basis." Under the new plan the maximum limit on surgical fees will be $1,000, and the maximum limit on medical charges $70 a week. According to *Detroit Saturday Night*, there has been a deficit of $2,400,000 in the period during which Mr. Ford has operated the hospital.

"Minimum Program" for County Societies.—Thirty-four of the county medical societies had adopted the "minimum program" for county medical societies at the time the November *Journal of the Michigan State Medical Society* was published. The county medical society was considered during the year by the council and other officers of the state society and by officers of various county medical societies; from the suggestions offered, a program was developed and approved. There recently has been a series of meetings of the constituent society officers and councilors to take up the adoption of the minimum program, and at each meeting the societies have given unanimous approval. Those societies which have adopted the program have placed themselves on a sound business and educational basis.

Personal.—Mr. W. T. Bishop, president of the Lansing Board of Health, has resigned.——Dr. William T. Dodge, Big Rapids, formerly president of the Michigan State Medical Society, has been appointed chief surgeon of the Michigan Soldiers' Home, to succeed Dr. Howard A. Grube.—— Dr. Silas B. Frankhauser, Hillsdale, has been reappointed county physician.——Dr. Carl G. Fahndric, Northville, has been appointed medical director of the Calhoun County Hospital located east of Battle Creek.——Dr. George L. LeFevre, and Dr. Guy L. Connor, Detroit, have been elected president and secretary, respectively, of the state board of registration in medicine.——Dr. Leonard F. Thalner, city physician of Jackson, tendered his resignation, to take effect November 1, to engage in private practice; his successor is Dr. Earl B. Ritchie.——The Eugenics Society of the United States has awarded the first trophy prize in the recent fitter families contest, conducted at the Michigan state fair, to Dr. Thomas Reese Foster, Detroit (THE JOURNAL, August 29, p. 684).

Dedication of New University Hospital.—The board of regents of the University of Michigan, Ann Arbor, announces the dedication of the New University Hospital, November 19-21. The formal exercises will take place in the Hill

Auditorium at 8 p. m., the speakers being Drs. Victor C. Vaughan, Washington, D. C.; William J. Mayo, Rochester, Minn., and William S. Thayer, Baltimore. The guests of honor will be Governor Groesbeck, Senators Couzens and Ferris, Representative Michener, and Drs. Cyrenus G. Darling and Frederick C. Warnshuis, president and secretary, respectively, of the Michigan State Medical Society. There will be clinics at the hospital, November 20, by Dr. Thayer and Dr. Mayo, an inspection of the hospital in the afternoon, and a general meeting in the evening, at which the dean, Dr. Hugh Cabot, will preside and which Drs. Harley A. Haynes, director of the University Hospital, James B. Herrick, Chicago, and Charles P. Emerson, Indianapolis, will address. Saturday morning there will be a continuation of clinics by distinguished physicians of the state of Michigan. Dr. William J. Mayo will deliver the annual Mayo Lecture, in the Natural Science Auditorium, November 19, at 4:15 p. m., on "Splenic Syndromes."

MINNESOTA

Radio Talks.—The Minnesota State Medical Association has arranged for a series of lectures on medical topics to be given by prominent Minnesota practitioners of medicine over the radio from station WCCO. The first six numbers were: Infantile Paralysis, October 9; Pregnancy and Childbirth, October 16; Facts About Insanity, October 23; Blood Pressure, October 30; Your Heart, November 6; and Prevention of Tuberculosis, November 13.

Hospital News.—A delegation from the Sisters of St. Francis, St. Paul, recently inspected the University of Southern Minnesota, Austin, to determine its suitability for conversion into a hospital.——The Bethel Deaconess Hospital, Mountain Lake, is building a nurses' home.——A new cottage for women, having a capacity of seventy-five patients, at the St. Peter State Hospital, was recently opened. The hospital now has a population of more than 1,500.

Society News.—Dr. Leo G. Rigler addressed the Hennepin County Medical Society at a noonday meeting, October 28, on "Roentgen-Ray Visualization of the Gallbladder," and Dr. Claude C. Kennedy on "Volvulus of the Small Intestine."——The annual meeting of the Hennepin County Medical Society will be at noon, November 18. At the noonday meeting, November 4, Dr. Arthur A. Wohlrabe spoke on "Diagnosis and Treatment of Duodenal Ulcer," and Dr. Verne S. Cabot on "Surgical Treatment of Duodenal Ulcer."——At the regular meeting of the Minnesota Academy of Medicine, which was held at Rochester, November 12, Dr. Charles H. Mayo gave clinical demonstrations of cancer of the right colon; Dr. Plummer, the use of iodin in toxic goiters; Dr. Edward C. Rosenow, studies in poliomyelitis; Edward C. Kendall, Ph.D., progress in study of thyroxin, and Dr. Frank C. Mann, studies in liver function. There was a dinner at the University Club Rooms at the Kahler in the evening.——Dr. Samuel E. Sweitzer gave a lantern demonstration of skin diseases before the Hennepin County Medical Society, November 11, and Dr. John F. Curtin spoke on "Antrum Infection in Children and Its Treatment."——The headquarters of the Minnesota State Medical Association has been moved to 11 West Summit Avenue, St. Paul, the new home of the Minnesota Public Health Association.

MISSOURI

Hospital News.—The new $400,000 Christian Hospital at Carter and Newstead avenues, St. Louis, was recently opened.

State Board Awaits Decision in Test Case.—The action to be taken by the state board of health on citations pending against "physicians" to show cause why their license should not be revoked for alleged fraud will be determined largely by the decision in the test case now before the state supreme court. The new president of the board, Dr. William A. Clark, Jefferson City, said, according to the St. Louis *Post Dispatch*, that the board is tied up by various injunction proceedings but that it will push the remaining cases if it has jurisdiction. The case testing the jurisdiction of the board of health now before the supreme court grew out of a suit filed by Dr. Clara W. McGrew, St. Louis, to enjoin the board from proceeding with its case involving her license. The board then obtained a "preliminary of prohibition" in the supreme court to prevent the circuit judge in St. Louis from proceeding with the injunction case. The issue now before the supreme court is whether the writ shall be made permanent; if so, the ruling would uphold the jurisdiction of the board.

Dr. Adcox Confession.—The St. Louis *Star* is publishing serially the confession of Dr. Robert Adcox, who is under federal indictment and sentenced to serve two years in the Missouri penitentiary for his connection with medical diploma mills. Adcox relates how he arranged to secure high school certificates from public school officials in several states, and how he sold them to illiterate or poorly educated students for the purpose of entering certain low-grade medical schools. In future instalments, he says he will tell how "he dabbled in medical diplomas." The only other name involved thus far in the confession is that of Owen T. Owen, Chicago (THE JOURNAL, July 5, 1924, p. 46). In his testimony, November 4, in quo warranto proceedings brought by the state to revoke the charter of the St. Louis College of Physicians and Surgeons, Adcox testified that Dr. Waldo H. Briggs, dean of the St. Louis College of Physicians and Surgeons, had appointed him a solicitor of students for the school with the understanding that whatever was collected from the applicant in the way of tuition was to be equally divided between them. Adcox said that he charged the student in proportion to what he had and according to how badly he wanted to graduate, and that this amounted sometimes to as much as four times the regular tuition fee. Adcox said that his students frequently entered the St. Louis College of Physicians and Surgeons as late as Christmas and got credit for attending classes from the beginning of the term in October. There were plenty of cases, he said, in which students matriculated in October, went right home and got their degrees the next spring without ever having attended a class. Adcox said that sometimes he would take his students to the school where Dr. Waldo H. Briggs, the dean, would have his secretary make out cards showing attendance at the school for the freshman, sophomore, junior and senior years, and then the student would get a diploma. A student by the name of Draser, for example, attended the St. Louis College of Physicians and Surgeons for one semester, bringing with him credits for four years' work from the defunct Pacific Medical College. Draser obtained from Briggs "indefinite leave," then went home and did not return; a diploma was mailed to him in California, and it cost him between $500 and $600.

MONTANA

"Dermatologist" Arrested.—W. M. de Orgler, who claimed to be a dermatologist from Denver and to have a medical degree from Vienna, and a permit from the Montana Medical Board, is said to have gone to Billings recently to practice dermatology. He made arrangements with a local druggist and advertised in the newspaper. One of the first patients sent to de Orgler was from the assistant county attorney, whereupon he was arrested for practicing without a license and paid a fine of $50. De Orgler left for Worland, Wyo.

NEBRASKA

Hospital News.—The Pioneer Memorial Hospital, Dalton, which is in charge of Drs. Axel E. Hedlund and Guy F. Zarbaugh, was opened to receive patients, October 15.

NEW HAMPSHIRE

Society News.—Dr. James B. Woodman, Franklin, was elected president of the New Hampshire Surgical Club at the annual meeting at Portsmouth; Dr. Eugene B. Eastman, Portsmouth, vice president, and Dr. John F. Holmes, Manchester, secretary-treasurer. Dr. Eastman was toastmaster at the annual banquet. The clinical meeting next spring will be at Nashua.

NEW JERSEY

Personal.—Dr. Henry Wallace, Glen Ridge, director of the cardiac department, Mountainside Hospital, Montclair, has resigned and moved to New York City.

Hospital News.—The new nurses' home of the Nathan and Miriam Barnert Memorial Hospital, Paterson, the gift of Nathan Barnert, was dedicated, October 8.

Typhoid Bacilli in Potato Salad.—An investigation of a recent outbreak of typhoid in Barnsboro following a supper given by the local fire company in September disclosed, it is reported, that the outbreak was due to the eating of potato salad which had been prepared by a typhoid carrier. Three persons died as a result of the outbreak.

NEW YORK

Hospital News.—The board of governors of the New Rochelle Hospital, White Plains, announce a drive for $1,000,000, beginning November 21, for the expansion of the hospital.

Personal.—Dr. Carl Boettiger, Forest Hills, was elected vice president of the Queensborough Tuberculosis Association at the sixth annual meeting, October 28.——Dr. Donald C. Smelzer, assistant to the superintendent of the Buffalo General Hospital, Buffalo, has resigned to become superintendent of the Charles T. Miller Hospital, St. Paul, to succeed Dr. Karl H. Van Norman.

Site for Veterans' Hospital.—The U. S. Veterans' Bureau purchased, November 2, the 550 acre Holmes estate near Northport, L. I., as a site for a 1,000-bed hospital for mentally infirm veterans. Nearby are the Central Islip and Kings Park hospitals, also for mental patients; *New York Medical Week* says that the state of New York is building an additional $3,000,000 group of buildings on the Kings Park grounds for veterans from the state who are mentally ill.

New York City

Personal.—Holmes C. Jackson, Ph.D., professor of physiology, University and Bellevue Medical College, has been appointed dean of the New York College of Dentistry.

Hospital News.—The cornerstone of the extension to the Staten Island Hospital, New Brighton, S. I., was laid, October 17, by Edward C. Bridgeman, president of the Staten Island Savings Bank, who has been a trustee of the hospital for more than fifty years.——The annual benefit performance for the Hospital for Ruptured and Crippled will be "The Vagabond King" at the Casino Theatre, November 16.——The cornerstone of the new Caledonian Hospital, Brooklyn, was laid, November 8, and a campaign to raise $200,000 to complete the structure was begun the following day.

Society News.—At a recent meeting of the Manhattan Dermatological Society, Dr. Benjamin F. Ochs, the sole surviving charter member, and Dr. Ludwig Weiss, were made honorary presidents; Dr. George C. Andrews, Jr., chairman; Dr. Joseph J. Eller, vice chairman, and Dr. David L. Satenstein, secretary-treasurer.——Dr. William E. Preble, Boston, will address the Clinical Society of the Hospital for Joint Diseases, November 24, on the medical aspects of "Chronic Arthritis," and Dr. William Russell MacAusland, Boston, on the surgical aspects of that subject, with moving pictures of arthroplasty. Physicians are invited.

Lectures on Mental Hygiene.—The following series of lectures on mental hygiene will be given at the New York Academy of Medicine, beginning November 10:

Edwin Grant Conklin, Ph.D., professor of biology, Princeton University, "Development in the Light of Eugenics and Heredity."
Dr. Thomas W. Salmon, professor of psychiatry, Columbia University College of Physicians and Surgeons, "Some of the Emancipation Problems of the Adolescent."
Dr. C. Macfie Campbell, professor of psychiatry, Harvard Medical School, "New Concepts of Mental Ill Health."
Dr. Adolf Meyer, professor of psychiatry, Johns Hopkins University, Medical Department, "Individualism and Mental Health."
Dr. William A. White, medical director, St. Elizabeth's Hospital, Washington, D. C., "Psychological Methods of Cure, Psychanalysis and Suggestion."
Dr. Ira S. Wile, New York, "The Mental Health of the School Age Child."
Dr. Augusta F. Bronner, "Juvenile Delinquency and Mental Hygiene."
Paul Klapper, Ph.D., dean, School of Education, College of the City of New York, "Mental Tests—Their Uses and Interpretation."
Dr. Abraham Myerson, professor of neurology and neuropathology, Tufts College Medical School, "Inheritance of Mental Diseases."
Dr. R. Foster Kennedy, professor of clinical medicine, Department of neurology, Cornell University Medical College, "The Relation of Nervous Disorders to Functional Disease."
Dr. Patty Hill, professor of education, Teachers' College, Columbia University, "Nursery Hygiene and the Nursery School."
Dr. Douglas A. Thom, instructor in psychiatry, Harvard Medical School, Boston.

OHIO

Physician Sentenced.—Dr. Frank J. Sofge, Cincinnati, was sentenced to three years in the federal penitentiary at Atlanta, October 19, by U. S. District Judge Hough, following his plea of guilty to violation of the Harrison Narcotic Law, it is reported.

Hospital News.—The Deaconess Hospital, Cincinnati, is conducting a drive for $500,000 for new construction.——The citizens of Fostoria will soon vote on a $50,000 bond issue, the proceeds of which will be used to convert the Emerine property into a hospital.——Alterations are being made on the McKinley Hospital, Columbus; it will be operated as an open hospital by a group of general practitioners. The head of the new organization is Dr. William H. Cleveland.

Cincinnati Dermatologists Organize.—The Cincinnati Dermatological Society was recently organized with Dr. Augustus Ravogli, president; Dr. Elmore B. Tauber, vice president, and Dr. H. Jerry Lavender, 715 Provident Bank Building, secretary-treasurer. Meetings will be the first Wednesday evening of each month except in summer, and visitors will be welcome. The secretary requests that dermatologists from other cities inform him at any time of their intended visits in or near Cincinnati.

Society News.—Dr. Charles A. Langdale has been elected president for the ensuing year of the Cincinnati Academy of Medicine, Dr. Victor Ray, president-elect; Dr. Alexander G. Drury, treasurer, and Dr. Elmer A. Klein, secretary——Dr. George W. Crile, Cleveland, addressed the Columbus Academy of Medicine, September 28, on "Problems Relating to the Liver and Biliary Tract," illustrated by lantern slides.——Dr. John A. Riebel gave a surgical demonstration before the General Practitioners Medical Society at the new McKinley Hospital, Columbus, October 29, of the new Gerad-Bassini herniotomy; Dr. Benjamin W. Abrahamson presented a case of epidemic encephalitis.——T. Wingate Todd, Henry Willson Payne professor of anatomy, Western Reserve University School of Medicine, Cleveland, addressed the November meeting of the Academy of Medicine of Toledo and Lucas County on "Royal Mummies."——Dr. Clarence D. Selby, president, Ohio State Medical Association, addressed the Harrisburg (Pa.) Academy of Medicine, October 6, and the Academy of Medicine of Toledo and Lucas County, October 21.

Personal.—Dr. Tedrow S. Keyser, Springfield, has been appointed head of the medical staff of the Clark County Tuberculosis Sanatorium, to succeed Dr. Clarence E. M. Finney, resigned. Dr. Keyser will take up his duties about December 1; he is a graduate of Johns Hopkins University Medical Department, Baltimore, and served in Germany and Roumania during the World War as a tuberculosis examiner.——Dr. Charles W. Conley has resigned as a member of the medical staff of the Ohio Industrial Commission and will be succeeded by Dr. Austin H. Seeds, Columbus; Dr. David P. Young, Dayton, has been added to the medical staff of the commission.——Dr. William H. Banner, Tiffin, has been appointed jail physician to succeed the late Dr. Charles W. B. Harbour.——Dr. Samuel P. Carter, West Manchester, has been appointed assistant surgeon for the American Rolling Mills, Middletown.——Dr. Henry T. Sutton, Zanesville, has been reelected president of the staff of the Good Samaritan Hospital.——Dr. Harold S. Cohn has resigned as medical examiner of the U. S. Veterans' Bureau at Cleveland.——Dr. Maurice I. Miller, Troy, has been appointed county physician to succeed the late Dr. Charles A. Hartley.

PENNSYLVANIA

Personal.—According to the Pittsburgh *Post*, Dr. John R. Conover was elected secretary of the newly organized Allegany County Health Association, October 30. Board of health officials from all parts of the county outside Pittsburgh were present and among the speakers were Dr. Charles H. Miner, state health officer, Dr. Samuel R. Haythorn of the University of Pittsburgh and Dr. Carey J. Vaux, health officer of Pittsburgh.

Physical Examinations for State Employees.—Governor Pinchot recently announced that the state department of health is prepared to make physical examinations of all employees of the executive departments. The examination of employees is voluntary except when they are absent from duty on sick leave for five consecutive days in a month, or for eight days in two consecutive months, or for employees who are believed by the health department to be a menace to the health of others and except all new employees.

Philadelphia

Personal.—George H. Meeker, Ph.D., dean of the Graduate School of Medicine of the University of Pennsylvania received the degree of doctor of laws from LaFayette College at the Founder's Day exercises, October 21.——Dr. Solomon Solis-Cohen, for many years professor of clinical medicine, Jefferson Medical College, was elected to membership on the board of education at the meeting of the board of judges, November 6.

Welfare Drive Continued.—To allow the 4,000 workers to reach persons whose names they have but whom they have been unable to canvas, the Welfare Federation Campaign for $3,157,000 will be continued for a week longer. The tabulating of final reports of the drive, which was to have ended at the close of the eight-day period, showed that the total subscribed was $2,527,944, or more than $600,000 less than the goal.

Society News.—Dr. Theodore H. Weisenburg has arranged a symposium on "Nervous Diseases," which will be pre-

sented at the next scientific meeting of the Philadelphia County Medical Society, November 26, at the College of Physicians.——The Board of Directors of the Philadelphia County Medical Society, Room 1208 Central Medical Building, desire information concerning certain founders of the society, and if possible photographs for historical classification. However slight, any information will be welcome concerning Drs. William Curran, William H. Tingley, Robert Foster, Thomas Hobson, James McCulloh, Frederich A. Martin, John M. Pugh, Neville C. Reid; ex-presidents, Drs. Benjamin Horner Coates-1859, George Hamilton-1868, and Francis M. Perkins-1903.

RHODE ISLAND

Smallpox at Woonsocket.—It is reported that the outbreak of smallpox at St. Francis Orphanage, Woonsocket, had affected eighteen children, October 31, and that there were fourteen cases in the orphanage when the outbreak was discovered; only two cases were severe, and these patients are convalescent.

Society News.—Dr. Jeffrey J. Walsh has been elected president of the Rhode Island Ophthalmological and Otological Society; Dr. John J. Gilbert, vice president, and Dr. Francis B. Sargent, secretary-treasurer. The society voted at this meeting to subscribe to the eye, ear, nose and throat journals for the medical library and to make the usual contribution in funds to the Rhode Island Medical Library Fund.

State Society Sponsors Radio Talks.—Through its committee on education, the Rhode Island Medical Society is sponsoring a series of health talks over the radio from Station WJAR, on Friday evenings at 8:50. The series began, October 16, and November 13 will be "Prenatal Care," Dr. Herbert G. Partridge; November 20, "The Baby: Its Proper Food," Dr. Henry E. Utter; November 27, "The Preschool Child," Dr. Harold G. Calder; December 4, "The School Child," Dr. Ellen A. Stone; December 11, "Tuberculosis in Childhood," Dr. John I. Pinckney; December 18, "Tuberculosis in Adults," Dr. Harry L. Barnes.

SOUTH CAROLINA

Personal.—Dr. Louis L. Williams has been appointed county health officer at Georgetown.——Dr. James B. Beeler, Columbia, a member of the staff of the State Hospital, has been elected superintendent of the Spartanburg General Hospital.

Society News.—The Greenville County Medical Society held a meeting, October 5, in honor of Dr. Robert S. Cathcart, Charleston, president of the South Carolina Medical Association. Dr. Cathcart spoke on "The Progress of Surgery" and on the work of the state medical association.

WASHINGTON

Increase in Death Rate.—The Department of Commerce announces that the 1924 death rate for Washington was 1,001 per hundred thousand of population, as compared with 966 in 1923. The increase is largely accounted for by increases in death rates from diseases of the heart, measles, nephritis and diphtheria.

Society News.—Dr. James Tate Mason addressed the King County Medical Society, Seattle, November 2, on "Some of the Pertinent Problems of Goiter," and Dr. William M. O'Shea, on "Vomiting of Pregnancy."——Dr. William H. Axtell, Bellingham, addressed the King County Medical Society, October 5, on "Gastro-Enteroptosis," and Dr. Lyle A. Greenwood, Bellingham, on "Observations on Blood Sugar."

WISCONSIN

Society News.—The Marathon County Medical Society, Wausau, gave a dinner in honor of Dr. Joseph F. Smith at the Wausau Club, October 21. Dr. Smith was recently elected president of the Wisconsin State Medical Society.

Personal.—Dr. Adolf Gundersen, La Crosse, a regent of the University of Wisconsin, has been awarded the Knighthood of St. Olaf by the king of Norway.——Dr. Mynie G. Peterman, associate in pediatrics, Mayo Clinic, Rochester, Minn., has accepted the position of director of laboratory and research at the Children's Hospital, Milwaukee.——Drs. E. Evans, LaCrosse; John W. Coon, Stevens Point; Charles D. Boyd, Kaukauna, and Gustave Windesheim, Kenosha, were reelected directors of the Wisconsin Anti-Tuberculosis Association at the eighteenth annual meeting, Milwaukee, October 30, and Dr. Michael R. Wilkinson, Oconomowoc, was elected as a new director.——Dr. Lawrence F. Dugan has resigned as house physician of the Emergency Hospital, Milwaukee, and has been succeeded by Dr. Harry T. King.

GENERAL

Prize for Health Work in Schools.—The American Child Health Association announced, October 11, that the $1,000 prize offered in its study of health programs in secondary schools of this country had been divided between the Jacksonville Consolidated School, Jacksonville, Ark.; the New Trier Township High School, Kenilworth, Ill., and the DeWitt Clinton High School, New York. More than fifty schools took part in the contest.

Section Meetings Discontinued.—The American Roentgen Ray Society, at the recent annual meeting in Washington, D. C., decided to discontinue sectional meetings. It has been evident for several years, the journal of the society says, that meetings devoted to roentgenology and radium therapy had become so frequent as to impose a burden on those required to attend them. The Radiological Society of North America previously had discontinued its summer meetings. The editor says that the number of meetings could be still further reduced without interfering with the progress of roentgenology and radium therapy.

Accidents at Coal Mines in September.—There was a loss of 142 lives in accidents at coal mines in the United States, in September, which, according to the Department of Commerce, were all at bituminous mines, work at the anthracite mines being suspended during the month. There were no major disasters reported. The fatalities represented a death date of 3.03 per million tons of coal mined, as compared with 3.76 for the corresponding period last year. The deaths of 1,612 men killed by accidents at coal mines in the United States have been reported to the Bureau of Mines in the first nine months of this year, representing a reduction in the death rate per million tons mined of 16 per cent.

Campaign for The Physicians' Home.—The campaign for an endowment fund for a national home for aged and needy physicians will be inaugurated, November 23, at a banquet at the Waldorf-Astoria, New York. Among those who have been invited to speak are Hon. Chauncey M. Depew, Hon. Elihu Root, Dr. Hubert Work, Secretary of the Interior, Cardinal Hayes, Hon. Samuel Untermyer, Dr. Charles H. Mayo, Dr. Alexander Lambert and Rev. S. Parkes Cadman. Persons desiring to attend the banquet should notify the secretary, Silas F. Hallock, The Physicians' Home, Inc., Twenty-Second Floor, *Times* Building, Broadway and Forty-Second Street, New York, promptly.

Accidents at Quarries.—According to the Bureau of Mines of the Department of Commerce, there were 138 deaths at quarries in the United States during 1924 and 14,777 injuries, as compared with 142 deaths in this industry and 14,990 injuries in 1923. The 1924 fatality rate is the lowest since the Bureau of Mines in 1911 began compiling data for quarries. The industry employed 94,242 men during the year. The employees averaged 269 workdays per man. Accidents inside the quarries killed ninety-six men and injured 8,990, while accidents outside the quarries, at crushers, mills, and rock-dressing plants, killed forty-two and injured 5,787. The principal causes of fatal accidents inside the quarries were falls or slides of rock, explosives, falls of persons, machinery and haulage, while the principal causes of fatalities outside were machinery, haulage, falling objects, falls and burns.

Postgraduate Classes in Stomatology.—The following courses, given under the auspices of the American Stomatological Association, are open to duly licensed physicians and dentists; stomatologic bacteriology, under the supervision of Drs. William H. Park and Charles Krumwiede; diagnosis and focal infection, Drs. George Reese Satterlee, Homer E. Smith, George A. Wyeth and others; stomatologic hygiene, Alfred J. Asgis, D.D.S., and E. B. Hardisty; dietetics in stomatologic practice, Holmes C. Jackson, Ph.D.; clinical dietetics, Dr. Robert H. Rose. Clinical and laboratory courses will be given at Fordham Hospital, University and Bellevue Medical College, Medical Laboratories, Midtown Hospital and other institutions. Information may be obtained from the Director of Classes, Aeolian Hall, 33 West Forty-Second Street, New York.

Women's Clubs Plan Health Surveys.—The department of public welfare of the General Federation of Women's Clubs has inaugurated a plan of health surveys in communities throughout the United States. The assistance of other organizations will be enlisted and the data collected submitted to

official agencies before publication. A prize will be offered the state showing the greatest interest in this program, and the Metropolitan Life Insurance Company, New York, will supply clubs with an outline by which such a survey may be conducted and furnish statistics whereby results may be compared with work done in other communities and, when the survey is completed and approved by local health officials, will print the report for distribution in the community concerned. All names of women's clubs completing the work should be in the hands of the General Federation chairman by April 1, 1926, if a state desires to compete for the national prize.

Automobile Fatalities.—There were 3,973 automobile fatalities reported to the Department of Commerce from January 1 to October 10 from fifty-nine cities in the United States having an aggregate population of 28,000,000. Reports from thirty-seven cities having a population of 100,000 or more show more automobile fatalities in the four weeks ending October 10 than in the previous four weeks, and that there were no automobile fatalities in the latter period in Grand Rapids, Mich., Kansas City, Kan.; Washington, D. C., and Wilmington, Del. New Bedford, with nine deaths, has the lowest rate (8.4) per hundred thousand of population. Among sixty-five cities in which comparisons are possible for 1924 and 1925, only sixteen reported more automobile fatalities in the period from Jan. 1 to Oct. 10, 1925, than in the first ten months of 1924. New York so far this year has reported 730 automobile fatalities; Chicago, 453; Philadelphia, 226; Detroit, 200; Cleveland and Los Angeles, each 173.

Sanitation in Jails.—A report submitted to the American Prison Association by its committee on jails, of which Dr. Hastings H. Hart, consultant at the Russell Sage Foundation, New York, is chairman, covers a study of 893 city and county jails throughout the country in which federal prisoners are kept. The committee found that many of these jails are overcrowded and insanitary and infested with vermin. It was not unusual at the Cook County Jail in Chicago, for example, to keep five prisoners in a cell intended for one, and similar conditions have existed in Detroit, Cleveland, New York and other cities. The report shows that the United States government is "boarding out" more than 7,000 prisoners to local jails over which the government has no control and many of which are "desperately overcrowded." A large part of these federal prisoners are simply awaiting trial, and a considerable number of them are subsequently legally proved innocent. Since the government has no jails of its own, the committee says, it inflicts a great injustice on the taxpayers in the counties where the prisoners are confined. The government boards its prisoners in various county jails at an average cost of 69 cents a day, and the fees received for federal prisoners go to the sheriff or jailer or to the county, depending on the laws in the state; in some places the income of the local jailer depends on what he can save from the food allowance of the prisoners. The committee says that the present system of boarding out prisoners in county jails is hopelessly unsatisfactory to all concerned, except to a limited number of county sheriffs and jailers.

LATIN AMERICA

Medical Practice in Honduras.—The Facultad de Medicina at Tegucigalpa frames the laws pertaining to the medical profession and examines foreign physicians who desire to practice in Honduras. The right to practice in that country may be obtained by completing a six year course in the department of medicine of the University of Honduras, the only medical school, but physicians from other countries may register their diplomas with the Facultad de Medicina and thereby obtain the right to practice. If a physician from another country has no diploma from a recognized school, he must take an oral and a written examination; this applies to dentists and pharmacists also. Certain formalities should be observed in order to avoid loss of time; for example, the signatures on one's diploma should be authenticated by the secretary of state of the state in which the school is located; the signature of the secretary of state should be authenticated by the Secretary of State of the United States, and his signature in turn authenticated by a Honduras consul in the United States. The diploma then, with the attached documents, is forwarded to Tegucigalpa to the minister of foreign relations, who transmits it to the minister of public instruction for the necessary registration. For those who take the examination in Honduras in order to practice and who do not speak Spanish, the Facultad de Medicina appoints a translator.

FOREIGN

Trachoma Epidemic in Germany.—The public schools in various sections of the Palatinate (a part of Bavaria) have been closed on account of an epidemic of trachoma, according to the New York *Times;* eighty-five school children have been placed in hospitals in the Hassloch district.

Medical Officer for London County.—Dr. F. N. Kay Menzies, director of the hospital and medical services department at the Red Cross of London, will succeed Sir William Hamer as chief medical officer for the County of London, Jan. 1, 1926, when Dr. Hamer will retire, after having served the council for nearly thirty-four years.

Vacant Professorships in Medicine in Ireland.—Dr. John Mallet Purser has resigned the chair of Regius professor of physic in Dublin University, and the vacancy will be filled in December. According to the *Lancet,* Dr. Purser has recently been in ill health. Dr. Joseph O'Carroll has resigned the chair of medicine in University College, Dublin, National University of Ireland, to which he was appointed in 1912.

Warning Against Studying Medicine.—The Prussian state authorities have issued a public warning against taking up the study of medicine in the next few years. Among the reasons given are that the outlook for physicians is the worst conceivable while the training in medicine is the most expensive of all the academic professions. The *Klinische Wochenschrift* adds that the warning was issued at the initiative of the officers of the organized medical syndicates, the Aerztekammern.

Annual Dinner at "Old Barts."—The annual old students' dinner of St. Bartholomew's Hospital, London, was held again this year in the Great Hall of the hospital, and the chairman was Mr. John Adams, F.R.C.S. Among many others present were Sir John Bland-Sutton, Sir Archibald Garrod, Lieut. Gen. Sir William B. Leishman, Surg. Vice-Admiral Joseph Chambers and Dr. W. Langdon Brown. Plans have been drawn up for the rebuilding of the hospital, which provide for more than 700 beds on the present site and for a paying patients' block with about eighty beds. The historic Great Hall (this hospital is more than 800 years old) will be left undisturbed.

American University of Beirut.—The dean of the Medical Department of the American University of Beirut, Syria, writes that the freshman class this year comprises twenty-five students and that there have been new appointments to the faculty of Dr. Stanley E. Harris as adjunct professor of internal medicine and therapeutics. Dr. Harris graduated from the University of Pennsylvania in 1923. Dr. Lepine, son of the dean of the Medical Faculty of the University of Lyons, France, has been appointed professor of pathology. A former student of Johns Hopkins Medical School, Mr. William Shanklin, is teaching histology, and Stanley E. Kerr, who has done special work at the University of Pennsylvania, is expected to take charge of the new laboratory in biochemistry. This school has its first fifth year class this year of nine men. The dean says that many of the other graduates are taking their year of internship in general hospitals in Palestine, Egypt or the Sudan or at the University of Montpellier in France. A large tract of land in the rear of the University Hospital has been added to the campus for purposes of expansion.

Deaths in Other Countries

James Niven, formerly medical officer of health for Manchester, England, September 30, aged 74.——Dr. **James W. Russell,** professor of medicine, University of Birmingham, September 20, in Devonshire, aged 62.——Dr. **Charles Frederick Sonntag,** anatomist to the Zoological Society of London and author of many papers on comparative anatomy; October 10, aged 38.——Dr. **R. C. Chicken,** consulting surgeon to the Nottingham General Hospital and formerly president of the Nottingham Medico-Chirurgical Society; October 3, aged 75.——Dr. **A. M. Arquellada,** Madrid, president of the Madrid Pediatric Society and surgeon in chief of the Niño Jésus children's hospital.——Dr. **G. Dorner,** professor of internal medicine at Leipzig, committed suicide October 5 in a recurring attack of depression.——Dr. **L. Bardach,** director of the German sanatorium at Nice for twenty-five years.——Dr. **A. Massone,** chief of the hygiene department of the Italian public health service.——Dr. **G. Perna,** professor of anatomy at Bologna and author of numerous works on anatomy.——Dr. **O. van der Stricht,** a Belgian biologist who lectured at various universities in this country during the World War, and whose last important work, on ovogenesis in mammals, was recently published with financial aid from America.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Oct. 23, 1925.

The Earliest London Woman

At a meeting of the Zoological Society, Mr. Warren R. Dawson and Prof. Elliot Smith exhibited what appear to be the earliest fossilized human remains discovered in London. They consist of the posterior two thirds of the cranium of a woman, estimated to be about 45 years of age from the condition of the sutures. The bony matter was so mineralized that there could be no question of its being the familiar case of a modern skull getting into a pit. The skull was found during recent excavations in connection with building operations in the city, 26 feet below the level of the street. The deposit there is Pleistocene river gravel. Remains of the mammoth had been obtained previously in the same area, both above and below the level at which the skull was found and at a deeper level of the deposit, part of the skull of a woolly rhinoceros had been found. The bed of river gravel is part of the third or lowest level of the Thames Valley, laid down when the river was much wider and deeper than now. From the anthropologic point of view, the horizon is associated with the upper paleolithic ages of human development. The discovery confirms the view that before the age of neolithic culture began in the south of England, there was an indigenous population, living for the most part in caves, ignorant of pottery or of metals, but making accomplished implements of stone, showing a strong artistic sense and living as nomad hunters. These Paleolithic races have belonged definitely to *Homo sapiens*, the species of modern man. Distinct from them and of unknown origin is the low-browed Neanderthal species, remains of which have been discovered in many parts of the world. In the opinion of Professor Smith, the skull in the present case was much flattened and similar to the Neanderthal type.

The Defense of the "Unconscious Mind" Fails in a Murder Case

At the central criminal court, a lad, aged 19 years, was tried for the murder of his aunt by marriage. The crime had very unusual features, for he was the woman's paramour and she had asked him to kill her. In cross-examination the police surgeon, called by the prosecution, admitted that for a humane boy to strangle the woman he loved in the circumstances disclosed showed an abnormal state of mind. He was asked, "If some one had reiterated commands given to him, such as 'Kill me,' might not he, in his state of mind, have done things without appreciating what he was doing?" He replied, "I suppose so." "Suppose a boy very emotionally moved and in a curious condition altogether suddenly loses control of himself, his subconscious mind might take charge of him and make him do something without his appreciating what he was doing?" The police surgeon again replied, "I suppose so." The judge then intervened by saying, "I don't quite understand this. Is the theory that the prisoner's condition of mind was such that his conscious mind ceased to function and he strangled the woman through the action of his subconscious mind?" The lawyer for the defense answered, "Yes." But the police surgeon said, "I do not think the conscious mind was lost in this case. We know the subconscious mind plays an important part, but I cannot say it takes up the work if the conscious mind is absent." Dr. Bronte, the government pathologist, was also cross-examined. He admitted that "calf love" might take a strong hold on a person, and that difficulties might increase that hold. He was asked, "Any one in that condition might be prone to suggestions by a person more mature than himself?" He answered, "Yes." Evidence was given for the defense that the prisoner was of a peculiarly gentle character, and that there had been insanity in the family. The defense was that under the circumstances his mind gave way and the woman's reiterated command, "Kill me! Kill me!" took possession of his subconscious mind and urged him to the act. In summing up, the judge asked the jury to consider whether at the time the prisoner committed the act he had any disease of the mind. If he did not appreciate the nature and quality of his act, or if he knew what he was doing, but he did not know that it was wrong, they could find him guilty but insane. This, of course, is the celebrated McNaghten rule, which recent medical opinion and still more recent legal opinion have declared to be inadequate. The jury found the prisoner guilty but recommended him to mercy.

Hospitals and Road Accidents

The enormous increase of road accidents due to the development of motor traffic has been pointed out from time to time in THE JOURNAL. The number of such accidents treated in the hospitals has now become a serious burden. In its last annual report, the British Hospitals Association stated that the number of such accidents treated was much more than formerly, and that there was no legal or other machinery in compensation cases to enable hospitals to reap any financial benefit for services rendered to the injured. Mr. E. W. Morris, house governor of the London Hospital, said that the number of motor accidents constituted a serious problem in that institution. The best treatment was provided, the expense of which was considerable, and the hospital could not legally claim anything for the service rendered to the injured person who was entitled to compensation. "There are insurance companies among our subscribers," he added, "and motorists and others injured have made contributions. But the amount is infinitesimal compared with the expense to the hospital. We do think that the services rendered by the hospital should be considered in compensation cases claims."

The Racial Problem in South Africa

Is white civilization doomed to extinction in South Africa? This question was raised by Dr. J. A. Mitchell, chief health officer of the Union of South Africa, at the Imperial Social Hygiene Congress at Wembley. The fertility of the black race was so enormous, he said, and their adaptation to the climate was such that it had been estimated that within fifty years they would exceed the white out of all proportion. There was an extraordinary tendency to exaggerate the prevalence of diseases among the natives. Statements were made that 50 per cent. and more were infected with venereal disease, but the total for all races was under 2 per cent. Under European rule, intertribal wars had been stopped; law and order were enforced; famine was prevented or checked, and, apart from the world-wide spread of influenza in 1918, there had been no serious epidemic in South Africa during the last forty years. The real racial danger was not that the native population would be reduced or destroyed, but that the Europeans may be elbowed out or swamped and absorbed by natives.

Workshops for the Tuberculous

Health officers from various parts of London attended a meeting at the Holborn town hall in support of the provision of workshops for tuberculous men and women. The borough of Holborn boasts the first workshop of this kind in the country, and the purpose of the gathering was to urge the necessity of establishing similar institutions. The Spero Leather Factory was established in 1922 by the Central Fund

for the Industrial Welfare of Tuberculous Persons and is at present subsidized by voluntary subscriptions. The idea is that patients leaving sanatoriums are often able to undertake some work, though not sufficient to yield a living wage. Colonies have been formed for their assistance in the past; but by means of the workshops, such as that in Holborn, the men can remain at home with their families. Wages at Holborn factory vary from $8 to $11 a week. Medical opinions expressed at the meeting were strongly in favor of such workshops.

The Cost of Malaria

Dr. Andrew Balfour, director of the London School of Hygiene and Tropical Medicine, estimates the direct annual cost of sickness and death attributable to malaria in the empire at between $250,000,000 and $300,000,000. A further vast loss is the diminished industrial efficiency due to the disease. The annual world death roll he estimates at 2,000,000.

The Prevention of Scarlet Fever and Diphtheria

In his presidential address to the Society of Medical Officers of Health, Dr. G. F. Buchan, health officer for Willesden, said that since 1875 the death rate of England and Wales had fallen by 46 per cent., and the infant mortality by 53 per cent., while the expectation of life at birth was greater by twelve years. Judged by these figures the health officer had well fulfilled his function, but there are some aspects of public health which did not throw so favorable a light on his work, particularly the continued prevalence of diphtheria and scarlet fever. In 1874 the death rate from diphtheria was 15 per hundred thousand persons and from scarlet fever, 105. Last year the figures were, respectively, 6.4 and 2.3. The total number of deaths from these diseases in 1874 was 3,560 and 24,922, respectivity; in 1924, 2,501 and 888. While the deaths and death rates from diphtheria had not materially changed during the period from 1874 to 1924, the deaths and the death rate from scarlet fever had greatly and progressively diminished. His own experience led him to the conclusion that hospital isolation was not effective as a means of prevention of diphtheria and scarlet fever; that the methods of disinfection in general use were without influence in prevention of the spread of these diseases, and that isolation hospitals, by increasing the length of infectiousness, defeated to some extent the object of prevention for which they were established. Hospital provision for the treatment of diphtheria and scarlet fever cost $15,000,000 per annum, exclusive of the cost of disinfection and other means of prevention. The bulk of this could be saved by the application of the newer methods of prevention revealed by recent research. These included the Schick test, the Dick test and immunization.

The London School of Hygiene and Tropical Medicine

The site for the new building of the London School of Hygiene and Tropical Medicine is near the British Museum. It is not expected that it will be ready for occupation before 1928. One source of anxiety has been removed. The trustees of the Rockefeller Foundation originally promised to provide a sum of $2,000,000, in 1922. This meant a considerably larger sum in sterling at the time than it does now, because of the depreciation of the British currency practically to par. Representatives of the board of management to the Rockefeller trustees have caused the latter to cancel this loss and have undertaken to provide a sum equal in British money to that which their grant would have yielded at the time it was made. The number of students in the tropical division of the school constitutes a record; for the year 1924-1925, it amounts to 227. The widespread benefit of the school is shown by the countries to which its students have gone. These include West Africa, East Africa, South Africa, Egypt, Mauritius, India, Ceylon, China, Hongkong, Federated Malay States, Straits Settlements, Siam, Palestine, the United States, South America, Trinidad, Australia, the Gilbert and Ellice Islands, France, Italy, Denmark and Serbia. With regard to research work, the most important development is the arrangement made between the authorities of the school and the government of Southern Rhodesia for the prosecution of medical research in that colony. Dr. G. R. Ross left England in March to conduct research on blackwater fever in the laboratory at Salisbury and in the field.

PARIS

(From Our Regular Correspondent)

Oct. 19, 1925.

Leukemia Following the Use of Radioactive Substances

Articles by Jagić Schwartz and Siebenbrock (1911), Aubertin (1902) and Mostram (1920), show that radiations of short wave length may cause destructive lesions of the blood-forming organs. A number of cases of grave anemia and pernicious anemia have occurred in persons who handle radium and thorium. The therapeutic use of these substances or of too strong or too often repeated doses of roentgen rays has sometimes produced similar conditions. Experimentally, too, acute anemic and hemorrhagic states have been induced in animals. Weil observed recently two civil engineers who had been working in the same laboratory preparing radioactive substances of the thorium group, one of whom succumbed to pernicious anemia and the other to myeloid leukemia. Weil has an interesting article in the *Presse médicale* on leukemia following the use of radioactive substances. Besides his own case, which he reports in detail, he cites from the literature seven other cases of leukemia that developed under similar conditions. Of these seven cases, five occurred in roentgenologists, one in a person who handled radium habitually, and one in a patient who had received roentgenologic treatment. Only two of the cases were published with the details. On the basis of these eight observations, leukemia following the use of radioactive substances seems to be established. This type of leukemia seems to be caused more particularly by roentgen rays, for most of the patients were roentgenologists; but radium and thorium may likewise be incriminated. In all cases the effects were produced through small doses frequently repeated over a long period.

The only case of therapeutic origin was in a patient with uterine fibroma, who was subjected to a single massive application of penetrating rays. Because four years intervened before the appearance of leukemia there is some doubt of a causal relation of the one to the other. If, however, a single massive dose of roentgen rays is capable of producing leukemia after so long an interval, other cases will be reported before long. Application of penetrating rays, now abandoned, was in vogue a few years ago and possibly their untoward effects will be revealed in further cases. The type of leukemia caused by roentgenologic irradiation is not peculiar in any way. It may be either of the lymphatic or the myeloid type.

Leukemia is often very favorably influenced (at least, at the start) by roentgenotherapy, and in that respect it resembles epithelial cancers of roentgenologists, which, although caused by roentgen rays, are nevertheless susceptible to treatment by roentgen rays or radium, in the usual doses.

Since the irradiations act both on the hematopoietic and on the reproductive organs, there is evidence in the patients of atrophy of the ovaries or testes.

The etiology of leukemia has been long in doubt. Some authors have regarded it as "cancer of the blood" or of the

hematopoietic organs; others, as a special infectious disease, bringing it into relation with such infections as produce not only an irritation of the hematopoietic organs but also a marked leukocytosis of the myeloid (smallpox, spirillosis in fowls) or lymphatic (malaria, mumps) type.

The fact that irradiations may produce both epithelioma and leukemia in man, together with the fact that irradiations act favorably on both, awakens the idea that the two affections are interrelated. Some progress might be regarded as accomplished if we could produce leukemia experimentally in animals just as skin epitheliomas have been produced by irradiations.

Hospital Intern, Victim of Accident

A number of years ago H. Vadon, a hospital intern in Paris, in puncturing a lymphorrhagic effusion in a patient operated on for cancer of the breast, accidentally pricked a finger of his left hand. At the site of the skin puncture there soon developed an ulcerous skin lesion, which proved rebellious to all forms of treatment and the true nature of which remained for a long time unrecognized. It was only after histologic examination of an engorged gland that the diagnosis of cancer could be made with certainty. The extension of the disease soon made necessary a disarticulation of the shoulder. This operation was courageously borne by the young man, aged 24, and the government has justly conferred on him the rank of knight of the legion of honor.

The Need of Early Diagnosis of Cancer

Cancer patients often do not seek the advice of a surgeon until the disease has spread to such an extent that a radical cure is difficult. The delays that arise before beginning radium therapy, roentgenotherapy or surgical treatment cause many deaths that might have been prevented. A few years ago, the Franco-American League for Combating Cancer endeavored to educate the public by distributing more than 100,000 copies of a small pamphlet entitled, "What You Should Know," which presented the cancer situation as follows: The number of cancers is increasing from year to year. Cancer affects all classes of society without distinction —women somewhat more frequently than men. In persons above the age of 40, it is one of the most frequent causes of death. It kills more than 40,000 persons in France, annually. Its incurability results most frequently from the ignorance of the public, which neglects cancer in its initial stages, since it is not painful during the first period of its development. If operated on early, it can be cured in a great number of cases, because at the start cancer is a local disease. The sick are urged, therefore, to suspect painless indurations of the breast, any abnormal oozing, persistent ulcerations of the tongue or lips, small cutaneous tumors that ulcerate or are increasing in size, persistent troubles of digestion (especially when accompanied by loss of weight), or the appearance of constipation when the stools have been previously normal. In all such circumstances, one should have oneself examined.

The Franco-American league has carried on the same campaign by posters, and its example has been followed by the Association française contre le cancer. The league has also organized lectures, which were attended with great interest. In this way a formal movement was launched. M. Strauss, who was then minister of public health, having presided at one of the general sessions of the league, was immediately won over for this campaign against cancer. Aided by the late Professor Bergonié, who was the most zealous worker in the campaign, he created in France a number of anticancer centers. M. Godart, who succeeded M. Strauss, has continued to give to the work the influence of his authority.

Professor Hartmann, the director of the Hôtel-Dieu in Paris, one of the most frequented anticancer centers, holds the view that, in order to make the crusade more effective, a special appeal should be made to physicians, for, without their cooperation in the movement, all efforts will be in vain. All physicians should familiarize themselves with the initial signs of various cancers, which are not fully explained in the textbooks. In order that physicians may have in a concise form, without burdensome details, descriptions of the beginning characteristic symptoms of cancer, Professor Hartmann, with the collaboration of well qualified colleagues, has edited a series of short articles dealing with the early diagnosis of the principal forms of cancer. These articles are to be published in the *Presse médicale,* and there is no doubt that they will render great service. The first article of the series is by Professor Forgue of Montpellier and deals with the diagnosis of cancer of the lip.

VIENNA

(From Our Regular Correspondent)

Oct. 12, 1925.

Diseases of Metabolism and of the Digestive Tract; the Vienna Convention

The fifth session of the Gesellschaft für Verdauungs- und Stoffwechselkrankheiten was held in Vienna, Sept. 30 to Oct. 5, 1925, under the chairmanship of Prof. Dr. Kuttner of Berlin. This society was founded only twelve years ago but has had a rapid growth. Whereas only 400 members took part in the Berlin session last year, more than 800 members from all parts of Europe were registered this year. At the opening meeting, Professor Wenckebach of Vienna was elected honorary chairman. Every day two papers were presented on some main topic, and, following these, there were shorter papers on the same subject. The opening papers were on "The Variations of Metabolism" and "The Skin in Relation to Metabolism." I can give here only the outlines of the most important papers. Professor Kestner of Hamburg discussed the physiologic bases of variations in metabolism. The correct technic for the determination of gas exchange is particularly important. The examination is made with the patient fasting and the muscles relaxed. Physiologic variations are caused by (1) endogenous factors (size, weight, sex and age) and (2) exogenous factors (temperature, skin irritations, mode of living and geographic location). As a rule, the basal metabolism is constant, but specific dynamic factors may cause a change: hunger, growth, pregnancy, convalescence. The anterior lobe of the pituitary body appears to exert an influence.

Professor Biedl of Prague discussed the variations of metabolism induced by the endocrine glands. Here two factors, both the "hormonal" and the "neural" factors must be reckoned with, but these are often merged. The hormones modify functions of certain organs, or directly affect metabolism. The most important organ, in this connection, is the thyroid. Biedl discussed also myxedema, exophthalmic goiter, and hypothyroidism and hyperthyroidism. In hypothyroidism, basal metabolism may drop to 50 per cent. of normal, or even less; the hair, nails and skin are "abnormal." The ingestion of thyroid substance raises the basal metabolism. Determination of the basal metabolism establishes the differential diagnosis between genuine exophthalmic goiter and forms of hyperthyroidism. It also serves as a guide to treatment, and may throw light on the indications for operation. The thyroid also influences muscular work. Thyroid substance has a direct effect on the body temperature. The parathyroid glands influence calcium metabolism; nothing is known as to the effects of the thymus, and very little about the effects of the gonads. The anterior lobe of the pituitary body affects growth; the middle lobe, metabolism, particularly the metabolism of fat. The "suprarenal system" has an effect on the metabolism of carbohydrates and fats. At the various periods of life, sometimes one system, and sometimes another, exerts the dominant

influence, which would explain cyclic fluctuations in men, women and children.

Prof. Dr. Grafe of Rostock discussed metabolism in pathologic conditions. Researches of this nature should be undertaken only in a hospital and not in the patient's home, since no reliance can be placed on a single short observation. In warm-blooded animals, the intensity of metabolism depends on three factors: (1) the metabolism of the tissues themselves; (2) influence of the nerves, and (3) endosecretory processes. Food will increase the metabolism. Fever also will produce marked quantitative changes.

In his paper on "The Skin in Relation to Metabolism," Bloch of Zurich stated that heretofore the connection between these two factors had been known in only a small number of diseases. Sometimes a disease that originates in the skin affects the internal organs and sometimes the reverse is true, dermatoses resulting from disturbance of metabolism. The effects of dermatoses on the internal organs have not been sufficiently investigated. In allergic reactions, the skin appears to act as a protection through the vegetative nervous system or through "cutaneous hormones."

The topic of the second day was "The Genesis and Treatment of Constipation and Diarrhea." Professor Strassburger, internist, of Frankfort, stated that constipation might be of functional or of mechanical origin. Diarrhea—except in catarrh—he considers due to disturbance of motility and of the excretion of fluid by the intestinal wall.

Constipation from the surgical point of view was discussed by Professor Payr of Leipzig. The most frequent cause for surgical intervention was intestinal stenosis (neoplasm), but there were also mechanical causes, such as adhesions. In reflex spastic intestinal occlusion, operation should be postponed until after subsidence of the acute attack. Payr considered also the failures and the complications of such procedures. The roentgenologic aspects of the question were treated by Holzknecht of Vienna. In fluoroscopy one rarely sees movements of the whole intestine. Slight (also reversed) intestinal movements are more frequent. Long-continued constipation may be divided into the dyskinetic, the hypokinetic and the spastic forms. As a rule, one form merges into another, and is often dependent on the constitution and the bodily type of the patient. The roentgenologic aspects of diarrhea are as yet little known. Dr. Bergmann of Frankfort brought out that intestinal function is affected by mental and physical habits; it is a delicate reflex process, which is disturbed by the habits and customs of civilization.

Boas of Berlin presented a paper on chronic appendicitis. There is a form of chronic appendicitis without demonstrable preceding attacks; this form must be carefully distinguished from acute recurring forms. The chronic type has no special characteristics, except pains in the region of the cecum. It is liable to be confused with other conditions. Roentgenologic examination is valuable. Treatment is almost exclusively surgical, and a policy of waiting—especially in children—often leads to disaster. Professor Haberer of Graz approved in the main the statements of Boas, and emphasized that in many patients who were operated on and gave no history of symptoms there were signs of previous inflammation. Grave appendical changes—even empyema—may not be associated with fever.

The third day, papers on "Cirrhosis of the Liver" and on "Diseases of the Spleen and Liver" were read. Sternberg of Vienna discussed the pathologic anatomy of cirrhosis of the liver, and gave a demonstration with lantern slides and preparations. He considered the various forms of hepatitis and pointed out the difference between pigment cirrhosis, or pseudocirrhosis, of the liver and the genuine type. The etiology is still unknown.

The clinical paper on cirrhosis of the liver was presented by Eppingen of Vienna, on the basis of 372 cases, verified by 135 necropsies. Seventy-two per cent of the cases are in men. The disease occurs, for the most part, between the ages of 40 and 50; from six months to eight years elapse before it proves fatal. The history of the patient is important; syphilis, abuse of alcoholic beverages, icterus and dyspepsia are often mentioned. In 80 per cent. of the cases, enlargement and hardening of the liver occur; tumor of the spleen is found in 70 per cent.; icterus, in 50 per cent.; in the duodenal secretions, bile is always found; ascites occurs in 52 per cent. and distended veins in 27 per cent.; esophageal hemorrhages in 10 per cent.; low blood pressure in 76 per cent; pruritus in 18 per cent. (in combating which Eppinger has found calomel very efficacious). Fever occurs only in 33 per cent.; colic (also pseudogallstone colic) is frequent; pancreatitis is observed in 20 per cent.; absence of hair on the arms and legs is a peculiar symptom in 30 per cent. Leukopenia or leukocytosis has been noted in 56 per cent. Examination of the gastric juice, the stools, the urine (determination of urobilin) is important. Also roentgenograms furnish valuable evidence. Coma hepaticum occurs but rarely (in from 5 to 7 per cent.)—with bradycardia and high fever but no acetone. To combat this condition, Eppinger recommends an infusion of glucose. Of the cases examined, 24 per cent. were atrophic, 6 per cent. hypertrophic-cirrhotic, and 70 per cent. partly each. In the Läennec type, alcoholism was present in 61 per cent. of the cases; syphilis, in 8 per cent.; icterus, in 8 per cent., and infectious disease in 6 per cent. Eppinger considers cirrhosis from the standpoint of the double function of the liver, since it affects mesenchymal and epithelial tissues.

Hijmans van den Berg of Utrecht discussed "The Mutual Relations Between the Spleen and the Liver." Little is definitely known concerning the function of the spleen, and therefore little as to its relation to the functions of the liver. It is probable that the spleen prepares the red corpuscles (under normal conditions) for destruction in the reticuloendothelial apparatus of the liver. But, since in the splenic artery just as much bilirubin is found as in the splenic vein, it appears that the spleen does not normally participate in the production of bilirubin. In pathologic conditions—poisoning, pernicious anemia and hemolytic icterus—the case is different. In animals from which the liver has been removed, bilirubin is found in the blood. Where there is extravasated blood, there is an extra amount of bilirubin formed. In a number of diseases, blood in large quantities flows through the splenic pulp, and the red blood cells are probably partially disintegrated there and thus prepared for the liver. As yet we do not know in which diseases removal of the spleen is advantageous, nor why it should be advantageous. We must rely on the observations of the surgeons for information in regard to the effects on other organs of spleen extirpation. Ranzi of Innsbruck pointed out the rapid compensation following spleen extirpation. Often no marked effects due to the loss of the spleen were noted. To be sure, changes in the blood picture are observed even twenty years later. The results of spleen extirpation are good in hemolytic icterus. In pernicious anemia the patient's condition may improve, but a cure is not effected. A large spleen gives a better prognosis. Ranzi employs blood transfusion before and after the operation, with good effect. The mortality is high in cirrhosis with splenomegaly and the operation is difficult, but the condition of the liver is here more important. Essential thrombopenia reacts very favorably, although leukemia is hard to influence, and in acute yellow atrophy of the liver operation has no effect. Ranzi reviewed the most common operative methods and their complications.

Discussion on the papers was limited to ten minutes. Dr. Snapper of Amsterdam discussed the metabolism of the kidney and its part in the acidosis of diabetes, in which the sound kidney destroys the beta-oxybutyric acid. Professor Singer of

Vienna pointed out the significance of poisonous substances developing in the intestine from putrefaction of proteins. To combat this condition, he recommended intestinal antisepsis, a diet rich in carbohydrates and poor in proteins, and free evacuation to prevent stagnation in the rectum. For conditions involving liver injury he prescribes magnesium sulphate and hexamethylenamin. Raab of Prague studied in dogs the hormonal and nervous regulation of metabolism and found that the pituitary body plays a leading part in metabolism; its function is closely associated with the function of the vegetative midbrain centers. The cerebral fat center is identical with the heat regulating center. Glaessner of Vienna reported good results in the treatment of skin diseases from the use of glycocoll. He prescribes from 5 to 10 gm. daily; he secures increased diuresis and relief from edemas, and relief of itching in icterus and eczema. Pulay discussed the disturbances of mineral metabolism (defective distribution of blood calcium); he has cured urticaria by the administration of calcium lactate. Porges incriminated typhilitis (putrefaction due to mucus in the cecum) as the cause of many dermatoses. Singer has found that sclerodermia results not only from thyroid disturbances but also from ovarian and pluriglandular affections—often in connection with intestinal disturbances. Ehrmann of Vienna, Lichtwitz of Altona, and Stümpke of Hanover dealt with disturbances of metabolism in skin diseases, while Liebesny of Vienna discussed hypophysial and thyrogenic obesity. Mendel of Berlin recommended insulin (from 4 to 8 units daily) in exophthalmic goiter. Holzknecht emphasized again the close relation between bodily build and intestinal activity. Lenz of Bern, Schindler of Munich, and Strauss of Berlin discussed problems of local impaction. Professor Borgbjaerg of Copenhagen and Zweig of Vienna treated of suppurative colitis, in which sometimes autovaccines and sometimes surgical intervention produced favorable results. Good roentgenograms of diseased appendixes were shown by Gottheimer of Berlin. Professor Mühsam of Berlin spoke favorably of the diagnosis by means of contrast mediums. Dr. Einhorn of New York presented a new method for the roentgenographic representation of the gallbladder. He introduces tetrabromphenolphthalein sodium directly into the biliary ducts by a duodenal tube, instead of injecting it. Glaessner of Vienna uses in chromoscopy of the stomach a 5 per cent. solution of neutral red, which is excreted in the stomach ten minutes after its intramuscular injection. Glaessner and also Wittgenstein have found this method very useful in masked ulcer and many cases of achylia. Bergmann of Frankfort presented a new method for testing the function of a cirrhotic liver. He injects bilirubin solution intravenously. A healthy person shows a normal color index within half an hour, whereas in liver disease an abnormal coloration persists for some time. Pick of Prague demonstrated that intestinal activity varies in the two sexes. In men, flatulence occurs under conditions which in women cause atonic constipation. Müller of Vienna, however, denied that atonic constipation existed.

A protracted discussion arose on the subject of Gaucher's disease, in which Pick of Berlin, Epstein of Vienna, Lieb of Graz, and others, participated. Gaucher's disease is a familial (not hereditary) affection involving the spleen, the bone marrow and the other blood-forming organs. It often develops in infancy, and takes a chronic course. Splenic puncture assures the diagnosis.

Balint of Budapest dealt with gastric ulcer. He has found that the tissues in ulcer patients contain more acid than those of healthy persons and therefore are much more sensitive. Alkan of Berlin emphasized a relation between the parathyroids and ulcer (frequency of tetany in connection with ulcer). The surgical treatment of gastric ulcer was discussed particularly by Finsterer of Vienna, who has performed total resection under local anesthesia or splanchnic anesthesia; and also by Eiselsberg of Vienna, who expressed himself as strongly in favor of surgical treatment. Fränkel of Berlin, Csaki of Budapest, and Haberer of Graz took part in the discussion and touched on many new factors of the pathology and physiology of gastric ulcer. For its diagnosis Glaessner recommended the ingestion of calcium lactate, followed by a lactic acid test of the urine.

Landsberg of Warsaw recommended insulin for the treatment of slowly healing wounds in nondiabetic patients; he employs insulin also to improve the appetite of convalescents, which makes forced feeding possible.

Reicher of Frankfort presented a treatment for gallstones which causes stones of considerable size to be passed. The method requires, however, critical testing.

This review of the transactions can only suggest the character of the papers presented. Berlin was chosen for the next meeting in 1926, and Professor Bergmann was elected chairman by acclamation.

BERLIN

(From Our Regular Correspondent)

Oct. 17, 1925.

The Medical Lectures in Essen

With the beginning of the period of inflated currency, scientists here were forced to struggle for their very existence. When, in 1920, the depreciation of the currency was commencing to affect the progress of scientific research, German learned societies and institutions of higher learning founded the so-called *Notgemeinschaft der Deutschen Wissenschaft*, with headquarters in Berlin, the object of which was to prevent collapse of German scientific research. During the four years and a half in which it functioned, it was able, with the help of funds furnished from domestic and foreign sources, but particularly with the aid of federal appropriations and contributions from the several states, to relieve the tension in many quarters and to make possible the carrying out of many plans of research. The four annual reports of the society show that many German scientific journals were kept going; many books, published during the war and postwar periods, and lacking in scientific libraries, were purchased; many important investigations in natural science and medicine were made possible, and many young scientists were given necessary financial aid.

Recently the Notgemeinschaft received a request from the mining companies in the Ruhr to hold a series of lectures for the workmen on the present status of medical research. Accordingly, the Notgemeinschaft has organized a course of eight lectures, to be delivered in Essen during the week from October 25 to 31. Invitations will be sent out by the three large leagues of mining companies. Nearly all the tickets will be reserved for them. The following topics will be discussed: the value of physical exercise as a means of avoiding tuberculosis, Bier of Berlin; the operative treatment of pulmonary tuberculosis, Sauerbruch of Munich; recent researches on human performance of labor (manual labor, fatigue, capacity), Rubner of Berlin; self-control of the body, Thomas of Leipzig; the theory of nutrition on the basis of war observations and recent researches, Müller of Munich; how we can remain healthy: prevention of infectious diseases, Krehl of Heidelberg; the value of necropsies and animal experiments with reference to public health and public welfare work, Aschoff of Freiburg, and the circulation of the blood, His of Berlin. Following the lectures, an opportunity will be given to ask questions of the speakers.

Incomes and Property Holdings of German Physicians

Some time ago, the statistical department of the Leipzig Verband or League sent out a questionnaire to all its members

in regard to the relative status of physicians' incomes and property holdings in 1913 and in 1924. Replies were received from 19,781 physicians, including 4,214 specialists. Of this number, 5,620 were postwar physicians, including 1,735 specialists. The league comprises at present 38,000 members, 8,000 of whom are officials or hold definite posts; very few of the 8,000 sent in reports. The statistical material was sent in, therefore, by about 65 per cent. of the physicians in the country. Table 1 gives a comparison of the total incomes before and since the war.

TABLE 1.—*Comparison of the Total Incomes Before and Since the War*

Marks	General Practitioners, 1913, per Cent.	The Same Physicians, 1924, per Cent.	Postwar General Practitioners, 1924, per Cent.	Specialists, 1913, per Cent.	The Same Physicians, 1924, per Cent.	Postwar Specialists, 1924, per Cent.
Below 12,000.....	55	78	78	43	61.6	71
Below 20,000.....	34	19	20.5	30.7	25	21.42
Over 20,000.....	11	3	1.5	26.3	13.4	7.58
	100	100	100	100	100	100

It is readily apparent that, since the war, the number of incomes amounting to more than 12,000 marks (about $3,000) has markedly decreased. The incomes of the specialists have not been affected to the same extent as those of the general practitioners, owing to the general deterioration of public health and the fact that many members of health insurance societies are being treated as private patients, especially by dermatologists.

Table 2 shows the incomes from panel practice before and since the war.

TABLE 2.—*Incomes from Panel Practice Before and Since the War*

Marks	General Practitioners, 1913, per Cent.	The Same Physicians, 1924, per Cent.	Postwar General Practitioners, 1924, per Cent.	Specialists, 1913, per Cent.	The Same Physicians, 1924, per Cent.	Postwar Specialists, 1924, per Cent.
Below 12,000.....	93.5	94	92.5	94.8	94	94
Below 20,000.....	5.8	5.6	6.2	5	5.64	5
Over 20,000.....	0.7	0.4	1.3	0.2	0.36	1
	100	100	100	100	100	100

Table 2 disproves the assertions of the *Krankenkassen* with reference to the "enormous" incomes of the panel physicians. Before and since the war, the majority of the incomes (more than 90 per cent) were below 12,000 marks (about $3,000) per annum.

Table 3 shows the property holdings as based on the reports of 12,602 prewar physicians. Here one sees the destructive effects of the inflation of the paper currency The holdings consisted for the most part of cash, mortgages, war bonds and personal and professional effects.

TABLE 3.—*Property Holdings of Prewar Physicians Before and Since the War*

Year	No Property, per Cent.	Below 20,000 Marks, per Cent.	Below 50,000 Marks, per Cent.	Below 100,000 Marks, per Cent.	Below 200,000 Marks, per Cent.	Below 500,000 Marks, per Cent.	More than 500,000 Marks, per Cent.
1913.....	8.3	15.4	19.2	21.1	20	13	3
1924.....	37.6	37.9	17.4	5.8	0.9	0.4	0

Table 3 reveals that, before the war, 57.1 per cent. of the physicians owned more than 50,000 marks, or approximately $12,000, in property; in 1924 the proportion was only 7.1 per cent.

Marriages

ROBERT OGDEN DU BOIS, New York, to Miss Elizabeth Harsen Chisolm of Ridgefield, Conn., October 11.

LEE SPOTTSWOOD LIGGAN, Callao, Va., to Miss Alice Elizabeth Hechler of Richmond, September 9.

MILTON EDWARD BEITENMAN, Cascade, Iowa, to Miss Kathryn Dolan of Omaha, October 11.

ROBERT BEEBE HAUVER, Cleveland, to Miss Katherine Carlson of Warren, Pa., October 28.

FRANK C. HENRY, JR., Perth Amboy, N. J., to Miss Beatrice Brennig of New York, October 11.

JAMES EDWARD FITZGERALD, Chicago, to Miss Dorothy Dow of Lockport, Ill., November 3.

HENRI ERNEST ABEL, Elizabeth, N. J., to DR. ALICE STEARNS GIBB of New York, October 24.

WILLIAM J. GOREY, Columbus, Ohio, to Miss Mary Faas of Springfield, September 16.

LUCIUS H. FOWLER, Minneapolis, to Miss Rachel Wilson of Stillwater, Minn., in October.

FRANK J. PETERSON to Miss Jane Adler, both of New York, October 7.

Deaths

Cassius Marcellus Riley, St. Louis; Miami Medical College, Cincinnati, 1870; professor of chemistry and toxicology, Beaumont Hospital Medical College, 1886-1892, and Barnes Medical College, 1892-1907; dean, Barnes College of Pharmacy, 1904-1907; formerly director of the American Research Laboratory; aged 81; died, October 18.

Joseph William Legault, Oakland, Calif.; University of Montreal Medical Faculty, Montreal, Que., Canada, 1890; member of the California Medical Association; on the staff of the Merritt Hospital; aged 58; died, October 22, of a self-inflicted bullet wound.

Hickman Ray ✠ Durham, N. C.; University of Maryland School of Medicine and the College of Physicians and Surgeons, Baltimore, 1915; formerly secretary of the Durham Orange County Medical Society; aged 36; died, October 17, at the Watts Hospital.

Louis Eben Poole ✠ Union City, N. J.; Jefferson Medical College of Philadelphia, 1902; served in the M. C., U. S. Army, during the World War; on the staff of the North Hudson Hospital, Weehawken, where he died, October 25, aged 56.

James Monroe Turner, Northwilksboro, N. C.; University of Louisville School of Medicine, 1881; member of the Medical Society of the State of North Carolina; aged 67; died, October 18, at the Long's Sanatorium.

Charles Henry McKain ✠ Vicksburg, Mich.; University of Michigan Medical School, Ann Arbor, 1878; Bellevue Hospital Medical College, New York, 1882; aged 74; died, October 21, of cerebral hemorrhage.

George H. Chapman, Chicago; Rush Medical College, Chicago, 1874; member of the Illinois State Medical Society; local surgeon to the Illinois Railway; aged 74; died, November 1, of pneumonia.

William D. Groves, Ursa, Ill.; Missouri Medical College, St. Louis, 1883; member of the Illinois State Medical Society; aged 62; died, October 24, at St. Mary's Hospital, Quincy, of heart disease.

Charles A. Hartley, Troy, Ohio; Eclectic Medical Institute, Cincinnati, 1871; member of the Ohio State Medical Association; aged 78; died, October 21, of edema of the lungs and heart disease.

John R. Cowherd, Vine Grove, Ky.; Hospital College of Medicine, Medical Department Central University of Kentucky, Louisville, 1903; aged 57; died, October 10, of heart disease.

John Dargavel, Minneapolis; Victoria University Medical Department, Toronto, Ont., Canada, 1892; aged 67; died, October 16, at St. Mary's Hospital, of acute dilatation of the heart.

Zadok Thornton Daniel ✠ Rushville, Neb.; Bellevue Hospital Medical College, New York, 1870; formerly health officer of Rushville; aged 76; died, October 21, at a hospital in Omaha.

Elijah Miller, Camden, N. J.; University of Pennsylvania School of Medicine, Philadelphia, 1886; aged 67; died at the Millville (N. J.) Hospital, October 7, of cerebral hemorrhage.

DeWitt C. Huff, Christiana, Tenn.; Vanderbilt University Medical Department, Nashville, 1877; member of the Tennessee State Medical Association; aged 79; died, October 17.

Julius Noll, Kerrville, Texas; University of Texas Department of Medicine, Galveston, 1912; member of the State Medical Association of Texas; aged 37; died, August 16.

Julius London, New York; Cornell University Medical College, New York, 1905; formerly on the staffs of the Mount Sinai and Lebanon hospitals; aged 41; died, in October.

Herbert P. Barton ✠ Los Angeles; Jefferson Medical College of Philadelphia, 1890; physician in charge of the Clara Barton Hospital, where he died, October 15, aged 59.

Clair Scofield Campbell, Wauseon, Ohio; Detroit College of Medicine and Surgery, 1894; served in the M. C., U. S. Army, during the World War; aged 53; died, October 21.

Joseph Howard Buffum, San Francisco; New York Homeopathic Medical College, 1873; aged 76; died, September 15, at the Wakefield Hospital, of chronic nephritis.

Marcellus Clinton Carpenter, Fairfield, Iowa; Rush Medical College, Chicago, 1882; member of the Iowa State Medical Society; aged 68; died suddenly in October.

Cyrus K. Ritchie, Velva, N. D.; Barnes Medical College, St. Louis, 1903; member of the North Dakota State Medical Association; aged 67; died, September 29.

Ernest Shillito, Marcellus, Mich.; Kentucky School of Medicine, Louisville, 1888; aged 61; died, October 9, of chronic nephritis and cerebral hemorrhage.

Laban H. Shank, Empire, Mich.; University of Michigan Homeopathic Medical School, Ann Arbor, 1889; died suddenly in October, of heart disease.

Mary C. Ford, Dover, N. J.; New York Medical College and Hospital for Women, New York, 1875; aged 89; died, October 17, at Essex Falls.

James A. MacMahon, St. Catharines, Ont., Canada; University of Toronto Faculty of Medicine, Toronto, 1887; aged 63; died, October 29.

William Van Doren ✠ Scranton, Pa.; Medical Department of the University of the City of New York, 1885; aged 67; died in September.

Alexander Raymond Harvie, Orillia, Ont., Canada; Victoria University Medical Department, Toronto, 1885; aged 65; died, September 28.

James Hiram Eastland ✠ Mineral Wells, Texas; Vanderbilt University Medical Department, Nashville, 1903; aged 49; died, October 21.

Stephen B. Harmon, Meridian, Miss.; University of Louisville (Ky.) School of Medicine, 1881; aged 75; died, October 10.

Johann H. William Meyer ✠ La Porte, Ind.; Rush Medical College, Chicago, 1876; formerly a druggist; aged 72; died, October 21.

Robert N. Herbert, Aspen Hill, Tenn.; University of Nashville Medical Department, 1867; aged 82; died in October.

James Grant Hainline, Denver; Keokuk Medical College, 1892; aged 63; died, October 21, of cerebral hemorrhage.

James D. Beer, Wooster, Ohio; Starling Medical College, Columbus, 1889; aged 66; died, October 20, of pneumonia.

William Henry Dunham ✠ Cincinnati; Cincinnati College of Medicine and Surgery, 1880; aged 79; died in October.

Millie Elizabeth Ellis, Brooklyn; Boston (Mass.) University School of Medicine, 1903; aged 54; died, October 24.

James Osborn Davis, Middletown, N. Y.; Albany Medical College, 1875; aged 78; died, October 18, of pneumonia.

Thomas Manly Dillingham, New York; Boston University School of Medicine, 1874; aged 74; died, October 26.

Joseph Cuneo, Denver; University of Naples, Italy, 1887; aged 69; died, October 16, following a long illness.

Patrick J. Watters ✠ Indianapolis; Medical College of Indiana, Indianapolis, 1879; aged 73; died, October 21.

J. S. Abernethy, Charlotte, N. C.; College of Physicians and Surgeons, Baltimore, 1878; died recently.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

MORE MISBRANDED NOSTRUMS

Abstracts of Recent Notices of Judgment Issued by the Bureau of Chemistry of the United States Department of Agriculture

Grandma's Compound Sarsaparilla.—About one hundred bottles of "Grandma's Compound Sarsaparilla" shipped from San Antonio, Texas, by the Park Laboratory Co. of that city to California in September and November, 1922, were seized by the federal officials on the charge that the product was misbranded. The preparation was analyzed in the Bureau of Chemistry which reported that it consisted essentially of potassium iodid (0.3 per cent.), alcohol (2.6 per cent.) with plant extractives including a laxative drug, sugar and water, flavored with sassafras oil. The preparation was declared misbranded, first because the label declared the presence of 10 per cent. of alcohol when actually there was only about 2½ per cent.; further, because it was fraudulently claimed to be a specific for all diseases of the blood, syphilis, rheumatism, erysipelas, pimples, boils, ringworm, female weakness, general debility and all constitutional diseases. In February, 1924, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 12658; issued February, 1925.*]

Hooper's Anodyne.—The O. P. Hooper Chemical Company, Chester, Pa., shipped in June, 1922, a quantity of "Hooper's Anodyne" from Pennsylvania to New York. The federal authorities seized the product on the charge that it was misbranded. When analyzed in the Bureau of Chemistry it was reported to consist essentially of morphin hydrochlorid, glycerol, sugar, salicylic acid and water, flavored with spearmint. The following claims were printed on the bottle:

"Administered To Children Suffering From Colic Summer Complaint or Teething It Produces A Most Wonderfully Beneficial Effect . . . for Violent Colic . . . in Teething."

"For Babies Relieves Colic, Aids Digestion . . . . makes Teething Easy . . ."

"Invigorates The Stomach and Bowels, Prevents Vomiting, Also Inflammation Of The Stomach and Gives Tone and Energy To The Whole System."

"Will almost instantly Relieve . . . Colic."

In other words, this preparation belonged to that vicious group of nostrums sometimes spoken of as "baby killers." The stuff was declared misbranded because the claims made for it were false and fraudulent. In September, 1924, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 12755; issued March 13, 1925.*]

Ark-A-Lu.—The Vawter Drug Stores, Monroe, La., in June, 1923, shipped a quantity of "Ark-A-Lu," which the federal authorities declared was misbranded. The Bureau of Chemistry reported that analysis showed the stuff to consist essentially of Epsom salt, iron chlorid, nitric and hydrochloric acids, and water, with wintergreen flavoring. The label stated in effect that the preparation was an effective remedy and cure for stomach, liver and kidney diseases, rheumatism, piles, "Blood Diseases, Chills, Fever, Ague and Nervousness." These claims, naturally, were declared false and fraudulent and in October, 1924, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 12766; issued March 13, 1925.*]

Sanita.—The Newer Novelties Co., Los Angeles, Cal., are alleged to have shipped in interstate commerce in October, 1922, a quantity of "Sanita." When analyzed by the Bureau of Chemistry it was reported that the product consisted

essentially of capsules of cocoa butter and tannin with a trace of boric acid. The product was sold under the following claims:

"Sanita . . . the most effective agent for the cure of Leucorrhoea . . . Ulceration and Inflammation of the Womb or Cervix, painful or suppressed menstruation, vaginitis, and to relieve the painful tenderness so frequently following the menses. . . . Weaknesses which manifest themselves by falling of the womb, etc., soon yield to the wonderful curative properties of Sanita."

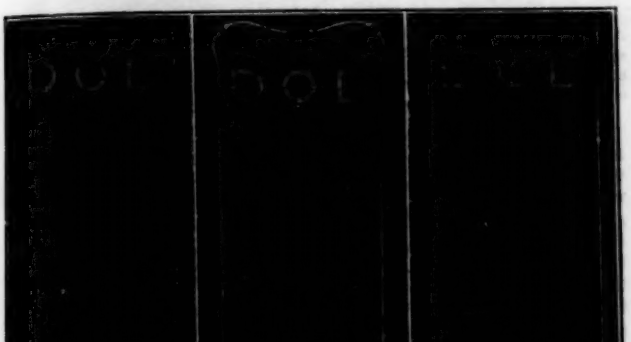
These claims were declared false and fraudulent, and in May, 1923, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment 13314; issued July, 1925.*]

D-O-D.—One R. Burbach of West Allis, Wis., is alleged to have shipped into Ohio a quantity of "D-O-D," which the government declared misbranded. Analysis of a sample of the article by the Bureau of Chemistry showed it to consist approximately of 93 per cent. baking soda, 6 per cent. potassium permanganate, and a small quantity of Epsom salt. Some of the claims made on the label for this product were:

"Guaranteed, when used according to directions, to relieve any disease caused by poison or Bacteria or money refunded."

"It Kills All Poison in the human system."

". . . a remedy has been discovered that will kill poison and bacteria in the human system wherever it can be reached, regardless of the disease—and that remedy is D-O-D . . . provides permanent relief to sufferers from every disease that is caused by poison . . . most all diseases are caused by poison in the human system . . . taken internally will kill the poison in the stomach and bowels which is responsible for . . . Dyspepsia, Dysentery, . . . Cholera Morbus, Ulcers, Ptomaine Poison and many other kindred ailments . . . Gangrene . . . Eczema, Piles, . . . Rashes, . . . and other skin diseases."



There were many other claims even more ridiculous and fraudulent than those quoted. In July, 1923, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 12770; issued March 13, 1925.*]

The files of the Bureau of Investigation contain a good deal of material on D-O-D. From this it appears that the stuff was put out by C. Nelson Smith Co., Inc., Milwaukee. Part of the advertising issued in 1923—at the time the federal seizures were made—are to the effect that the large Allis Chalmers steel plants at West Allis, Wis., "used D-O-D exclusively"; a testimonial purporting to be from the general works manager of that concern formed part of the advertising puffery.

Rose's Whooping Cough Remedy.—Aschenbach & Miller, Inc., of Philadelphia are alleged to have shipped in May and August, 1924, from Pennsylvania to Maryland, a quantity of "Dr. J. S. Rose's Whooping Cough Remedy." The Bureau of Chemistry reported that analysis of a sample showed this preparation to contain syrup, potassium nitrate, arsenic and cyanid. This dangerous mixture was sold under the claim that it was a cure for whooping cough—a claim that was declared false and fraudulent. In April, 1925, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 13317; issued July, 1925.*]

A. D. S. Special Kidney and Bladder Pills.—More than twenty-five hundred packages of A. D. S. Special Kidney and Bladder Pills shipped by the American Druggists' Syndicate from New York to California in November, 1924, were declared misbranded. The Bureau of Chemistry analyzed samples of the preparation and reported that the pills consisted of hexamethylenamine and extracts of plant drugs, including small quantities of resins and volatile oils mixed with magnesium carbonate. They were coated with sugar and chalk and colored blue. The label declared that the pills were a treatment for simple inflammatory conditions of the kidneys and bladder. These claims the government declared false and fraudulent and in January, 1925, the American Druggists' Syndicate of the Pacific Coast, having appeared as claimant, judgment of condemnation and forfeiture was entered, and the court ordered that the product be released to the concern on payment of costs and the execution of a bond conditioned in part that the preparation be relabeled so as to be brought into compliance with the law.—[*Notice of Judgment No. 13015; issued April 5, 1925.*]

Correspondence

"PIGMENTED MOLES"

To the Editor:—In THE JOURNAL, October 31, is a note on "Pigmented Moles." I do not think that the treatment recommended is radical enough. The time to stop a horse from running away is just before he starts, and if we wait with pigmented moles until they begin to grow, the damage is already done.

In THE JOURNAL, July 9, 1904, is a paper which I read before the Section on Surgery and Anatomy of the American Medical Association on "The Danger of Allowing Warts and Moles to Remain Lest They Become Malignant," and gave the history of twenty-five cases as a warning. Among the cases reported, some of them had existed for thirty, forty and even fifty years, and at last suddenly became malignant. In every case the entire thickness of the skin should be removed with the mole itself.

As an incident connected with that paper, I always remember that the next morning, on meeting Osler, he said to me, "From brain tumors to warts and moles—the first evidence of senility!" How characteristic of him!

But, soberly speaking, I think the advice that I gave in that paper is wise—that all such moles should be removed; for when they have once started on their malignant course, it is almost certain to be too late. Moreover if on an exposed part of the body they are a blemish. By an intracuticular suture there will be an almost invisible scar.

W. W. KEEN, M.D., Philadelphia.

PERSPIRATION AND THE ELECTRIC FAN

To the Editor:—In THE JOURNAL, October 31, page 1420, a correspondent asks as to the employment of an electric fan for the surgeon in the operating room who is given to perspiration. His question is partially answered by Kirschner, on page 1439 of the same issue. He distinctly advises the use of electric fans to play on the operating staff above the table.

For a good many years I have used in the operating room a pretty fair sized electric fan, tilted at such an angle that the breeze strikes the head and shoulders of myself and my assistants, but is above the level of the patient. The experience has been in every way exceedingly satisfactory, as such a fan adds materially to the comfort and well being of those within reach. There has not been the slightest evidence of any ill effect on the patients.

J. F. BALDWIN, M.D., Columbus, Ohio.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

DECIDUOUS TEETH

To the Editor:—A healthy boy, aged 4 weeks, developed a second incisor tooth, which was attached to the soft parts only, without root, and was easily removed with dressing forceps. The tooth is only a shell of a crown but is well formed. At 6 months he developed a similar first incisor, which the mother removed. I have them both. He is now 9 months old and has three normal teeth, but no sign of tooth in the left upper whence these two early teeth were removed. Kindly inform me whether this is unusual and worth reporting.

W. E. BRENNEMAN, M.D., Chicago.

ANSWER.—Many cases have been reported in which the deciduous tooth erupts before a sufficient amount of the root has been formed to hold it in place. In such cases the crown becomes loose and may easily be removed with the fingers. The child will doubtless be short the two teeth mentioned in the deciduous set.

DIFFERENTIAL STAINING OF MYELOCYTES

To the Editor:—Please furnish me with directions for differential staining of myelocytes from cells of lymphoid series by means of alpha-naphthol and of dimethylparaphenylendiamin.

LLOYD JONNES, M.D., Circleville, Ohio.

ANSWER.—A. Simpler method:

1. The slides are fixed with 4 per cent. formaldehyd solution for from twenty to thirty minutes.
2. They are put for about three minutes into a 1 per cent. solution of alphanaphthol in water containing 1 per cent. of potassium hydroxid.
3. The slides are transferred without drying or washing into a 1 per cent. solution of dimethylparaphenylendiamin (base) until they are blue.
4. They are dried with a filter paper.

Both solutions 2 and 3 may be diluted with a little water.

B. The stain keeps longer with the following method:

1. One gram of alphanaphthol is heated in 100 c.c. of water until it boils, and then concentrated solution of potassium hydroxid is added until the naphthol is completely dissolved. The supernatant fluid is used after cooling. This should be kept in a dark bottle.
2. A 1 per cent. solution of the dimethylparaphenylendiamin base in water should be prepared without boiling. This is used after a few days of standing.
3. Equal parts of 1 and 2 are mixed and filtered.
4. The slide is kept for two hours in a solution of formaldehyd (40 per cent.), 1 part, and alcohol, 3 parts
5. The slide is kept in Mixture 3 until the leukocytes are distinctly blue.
6. The slide is washed quickly with water.
7. It is put for three minutes into 1 part of compound solution of iodin and 2 parts of water.
8. It is kept for twenty-four hours in water with the addition of some lithium carbonate.
9. It is stained with alum-carmin, and perserved in glycerol-gelatin.

TROPIN, TUBERCULIN AND IRON CACODYLATES

To the Editor:—1. Has tropin been tried in acute glaucoma? 2. What is the status of tuberculin in the treatment of consumption? 3. What is the status of cacodylates of iron as a tonic? Are they worth while or questionable? D. H. P., California.

ANSWER.—1. No mention of the use of tropin in glaucoma has been found. According to Cushny (Pharmacology and Therapeutics, 1924), "atropin and its congeners are contraindicated when there is any suspicion of glaucoma, as, owing to their action on the intra-ocular pressure, they may either aggravate the disease already present or precipitate an acute attack."

2. The following statement is made in the Handbook of Therapy (Osborne and Fishbein, 1923): "Tuberculin is not in itself curative, but it is, at most, a stimulant to the curative efforts of the organism. Many observers are of the opinion that it is of value in selected cases of tuberculosis. . . . Its administration requires careful selection of the case, close observation of the patient and appropriate regulation of the dose."

Also, in this connection, our correspondent is referred to: "Ponndorf Vaccination," Queries and Minor Notes (THE JOURNAL, October 31, p. 1421).

3. Ferric cacodylates have the properties of iron and of cacodylates. In 1923 the Council on Pharmacy and Chemistry omitted iron cacodylate from New and Nonofficial Remedies because it had become convinced that this drug represents an irrational and useless method of the administration of iron and arsenic. The Council held that "a much more rational method of administration of these two drugs would be separately, in which case a better control of the dosage is possible."

INDICATIONS FOR SPINAL PUNCTURE

To the Editor:—Please give me the most essential clinical (physical) signs (not diseases) that a patient or patients may show which are absolute indications for the attending surgeon to perform an exploratory lumbar puncture. Furthermore, in which diseases of the central nervous system is such lumbar puncture contraindicated?

LOUIS M. N. FEDERICI, M.D., Springfield, Mass.

ANSWER.—Exploratory lumbar puncture is indicated in paralysis or paresis, the cause of which is unknown; convulsions, the etiology of which is not clear, and rigidity of the neck when combined with Kernig's, Brudzinski's and Babinski's signs.

Suspected tumor of the brain, especially of the cerebellum, is considered by some clinicians a contraindication for lumbar puncture, because of the possibility that a sudden release of cerebrospinal fluid may produce a herniation of the brain. However, when a manometer is used or when care is taken not to release the cerebrospinal fluid too suddenly or to collect too much fluid at one sitting, lumbar puncture may be resorted to even in cases of brain tumor.

LACTIC ACID MILK

To the Editor:—Regarding lactic acid milk, are the cultures sold by the various laboratories of any marked therapeutic value? Are they of more value than milk sugar? What is the established therapeutic value of bile salts? C. R. EATON, M.D., Seattle.

ANSWER.—The article "Lactic Acid-Producing Organisms and Preparations" (N. N. R., 1925, page 191) brings out that there is considerable evidence in favor of the therapeutic value of soured milk, particularly of sour milk containing an abundance of living *B. acidophilus*. Whereas the administration of *B. acidophilus* has for its object the implantation of living *B. acidophilus*, there are reports which indicate that the administration of milk sugar may produce the same results through promoting the growth of aciduric bacteria normally present in the intestinal flora.

An estimate of the value of bile salts appears in New and Nonofficial Remedies, 1925, page 71.

HAIR DYE

To the Editor:—I have been asked whether there is a reliable and noninjurious hair dye. If question is published, please do not mention name. M.D., New Jersey.

To the Editor:—One of my patients has black hair, which is turning gray, and for good reasons she wants to dye it. What can I recommend that will be the least harmful? AMY WEISS, M.D., Chicago.

ANSWER.—The least dangerous black dye is the old combination of iron salts and tannic and gallic acids. The hair is washed thoroughly, dried, and then washed with:

	Gm. or C.c.	
Ferrous sulphate	0|6	gr. x
Glycerin	32|0	oz. i
Water to make	500|0	O i

The hair is allowed to dry and is then brushed thoroughly. This procedure is repeated each day for three days. Then, with a fine comb, this solution is applied:

	Gm. or C.c.	
Gallic acid	0|25	gr. iv
Tannic acid	0|25	gr. iv
Water to make	50|0	oz. jss

One should avoid touching the scalp with this, or a temporary stain may result. As further color is required, the two solutions may be used on the same day, always allowing the hair to dry, and brushing it, after the first one, then waiting an hour or more before applying the second. There are other more brilliant black dyes, but all are more or less dangerous.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

DELAWARE: Wilmington, Dec. 8-9-10. Pres. Med. Coun., Dr. Henry W. Briggs, 1026 Jackson St., Wilmington.

MARYLAND: Baltimore, Dec. 8-11. Sec., Reg. Bd., Dr. Henry M. Fitzhugh, 1211 Cathedral St., Baltimore, Sec., Homeo. Bd., Dr. J. S. Garrison, 517 Old Orchard Rd., Baltimore.

NORTH CAROLINA: Raleigh, Nov. 25 (Endorsement of Credentials only). Sec., Dr. Kemp P. B. Bonner, Morehead City.

OHIO: Columbus, Dec. 2-4. Sec., Dr. H. M. Platter, Hartman Hotel Bldg., Columbus.

TEXAS: Dallas, Nov. 17-19. Sec., Dr. T. J. Crowe, 918-919 Mercantile Bank Bldg., Dallas.

VIRGINIA: Richmond, Dec. 8-11. Sec., Dr. J. W. Preston, 720 Shenandoah Life Bldg., Roanoke.

WISCONSIN: Milwaukee, *Basic Sciences*, Dec. 18-19. Sec., M. F. Guyer, Madison.

Illinois June Examination

Mr. V. C. Michels, superintendent of registration, of the Illinois Department of Registration and Education, reports the written and practical examination held at Chicago, June 23-26, 1925. The examination covered 10 subjects and included 100 questions. An average of 75 per cent. was required to pass. Of the 160 candidates examined, 145 passed and 15 failed. Fifteen candidates were licensed by reciprocity. Four reciprocal candidates failed on clinical examination. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Chicago Medical School	(1922) 75, (1923) 77, 84, (1924) 75, 76, 77, 78, 79, 82, 85, 90, (1925) 82		
Jenner Medical College		(1917)	79
Loyola University School of Medicine	(1925) 75, 78, 79, 79, 79, 80, 80, 80, 81, 81, 81, 83, 84, 84, 88		77, 78,
Northwestern University Medical School	(1925) 75, 77, 78, 78, 79, 79, 80, 80, 80, 81, 81, 81, 81, 81, 81, 82, 82, 82, 82, 83, 83, 84, 84, 84, 85, 85, 88		77, 78,
Rush Medical College	(1925) 75, 81, 81, 82, 82, 83, 83, 84, 85, 85, 86, 88, 88, 88, 89, 90		
The General Med. Coll., Chicago	(1924) 78, 78, 79, 80, 83, 84,		86, 86
University of Illinois College of Medicine	(1925) 78, 78, 79, 80, 80, 80, 81, 81, 81, 81, 82, 82, 82, 82, 83, 83, 84, 85, 85, 86, 86, 86		76
State University of Iowa College of Medicine	(1924)		85
University of Louisville School of Medicine	(1924)		83
Johns Hopkins University Medical Department	(1923)		86
University of Michigan Medical School	(1924)		83, 88
University of Minnesota Medical School	(1924)		82
St. Louis University School of Medicine	(1920) (1924) 77, 80, 87, 89, (1925) 81		82
Washington University School of Medicine	(1924)		79, 80, 80, 81, 82, 85, 86, 86
Syracuse University College of Medicine	(1924)		83
University of Oregon Medical School	(1924)		78, 83
Jefferson Medical College of Philadelphia	(1922) 87, (1924)		87
Meharry Medical College	(1923)		76
Vanderbilt University School of Medicine	(1924)		86
Baylor University College of Medicine	(1924)		81
Queen's University Faculty of Medicine	(1915)		85
University of Toronto, Faculty of Medicine	(1922)		85
University of Graz, Austria	(1919)*		79
University of Vienna, Austria	(1921)*		82
University of Kharkov, Russia	(1914)*		77
University of St. Vladimira, Kief, Russia	(1923)*		79
University of Berne, Switzerland	(1912)		79
University of Zurich, Switzerland	(1922)*		79

College	FAILED	Year Grad.	Per Cent.
Chicago Medical School	(1923) 73, (1924)		70, 76†
Loyola University School of Medicine	(1925)		78†
Eclectic Medical University, Kansas City	(1917)		76†
University Medical College of Kansas City	(1911)		75†
Meharry Medical College	(1914)		51
Royal University of Palermo, Italy	(1923)*		68
University of Naples, Italy	(1920)* 68, 69, (1923)*		74
University of Cluj, Roumania	(1922)*		73
University of Kharkov, Russia	(1915)*		‡
University of Odessa, Russia	(1918)*		77†
University of Saratov, Russia	(1916)*		74

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Hahnemann Medical College and Hospital, Chicago		(1909)	Tennessee
Northwestern University Medical School		(1906) (1919)	Oklahoma, Wisconsin
Rush Medical College		(1900)	Michigan, (1924) Colorado
Indiana University School of Medicine		(1917), (1922)	Indiana
University of Louisville School of Medicine		(1917)	Tennessee
Johns Hopkins University Medical Department		(1923)	Maryland
University of Minnesota Medical School		(1923)	Minnesota
University of Nebraska College of Medicine		(1923)	Nebraska
Hahnemann Med. College and Hosp. of Philadelphia		(1898)	Penna.
Meharry Medical College		(1917)	Texas
Vanderbilt University School of Medicine		(1921)	Indiana

* Graduation not verified by the American Medical Association.
† Fell below 60 per cent. in one or more subjects.
‡ No grade given.

Book Notices

LE TRAITEMENT DE LA SYPHILIS PAR LES COMPOSÉS ARSENICAUX ET LES PRÉPARATIONS BISMUTHIQUES AVEC L'EXPOSÉ DES NOUVELLES MÉTHODES DE LABORATOIRE. Par le Dr. Lacapère. Avec la collaboration du Dr. Ch. Laurent, Médecin des hôpitaux de Saint-Etienne. Fourth edition. Paper. Price, 16 francs. Pp. 341. Paris: Masson et Cie, 1925.

This deals particularly with the use of arsenical and bismuth preparations in the treatment of syphilis. One also finds the necessary information regarding the use of mercury and potassium iodid. A portion of the book is devoted to the laboratory measures employed in the diagnosis and surveillance of this disorder. The last section has to do with the applied therapeutics of syphilis, dealing with prophylaxis, primary and secondary syphilis, tertiary syphilis and the congenital form. In connection with the last named variety, rules are laid down for the marriage of syphilitic patients and also for treatment during pregnancy. The author prefers arsphenamin but believes that neo-arsphenamin can be made almost as efficient by combining it with bismuth. He adheres to the principle of small doses at first, gradually increasing to the maximum amount. These arsenicals are best given intravenously. Of the bismuth preparations the hydroxid and bismuth quinin iodid are especially recommended. Mercury he believes to be largely supplanted by bismuth. Sulpharsphenamin, given intramuscularly, is favored for the treatment of congenital syphilis. The irreducible Bordet-Wassermann reaction should be attacked by arsphenamin plus an insoluble bismuth salt. Lacapère, however, mentions satisfactory results in such cases following a series of lipiodol injections. The arsphenamins, intravenously, represent the best agents for immediate sterilization or for the cure of a grave lesion. In a generalized syphilitic infection the association of arsenic and bismuth gives durable results. When the clinical and humoral symptoms have been mastered, bismuth is particularly indicated as the basic treatment by reason of its long continued action. Potassium iodid is recommended in the cerebral lesions of tertiary syphilis and also in the attentuated forms of congenital syphilis characterized by dystrophic lesions due to endocrine involvement (Hutinel). In those intolerant to potassium iodid, Lacapère adds to it a little tincture of belladonna or else gives the patients epinephrin by mouth, in 20 minim (1.25 c.c.) doses, two, three or more times daily, thus neutralizing the vasodilator effects of the iodid. On account of the same tendency, he does not give the iodid during a course of arsenical treatment. The Bordet-Wassermann and Hecht tests ought to be done together, since reliance should not be placed on the Hecht alone. Vernes' flocculation test is simple but lacking in sensitiveness. Lumbar puncture is best performed during the fourth year of infection, as Ravaut has suggested. The colloidal benzoin test of Guillain and his collaborators is recommended as being much simpler than the colloidal gold test. The internal use of arsenical derivatives as prophylactic agents is discussed, and stovarsol is accorded considerable praise. No mention is made of the intravenous use of sodium thiosulphate for the dermatoses due to the arsenicals, but it is recommended for local injection when a portion of the arsenical drug has been given extravenously. All in all, this is a comprehensive and practical summary of the subject from the pen of a well known French clinician. A fourth edition within seven years attests to its popularity. It is to be highly recommended to those interested in this subject.

SURGICAL TREATMENT OF PULMONARY AND PLEURAL TUBERCULOSIS. By J. Gravesen, M.D., Medical Superintendent, Vejlefjord Sanatorium, Denmark, with a foreword by S. Vere Pearson, M.D., M.R.C.P., Resident Physician Mundesley Sanatorium. Cloth. Price, $3.50. Pp. 155, with 87 illustrations. New York: William Wood & Co., 1925.

In the last few years there has been a growing interest in the treatment of pulmonary tuberculosis by surgical intervention. Artifical pneumothorax has been the chief method employed by the majority of men interested in this special field. Since the World War, a great tendency has developed to go one step farther and collapse a lung by those methods as first advocated by Brauer and Sauerbruch. Gravensen's

treatise comes at a most opportune time. He discusses at length the various procedures used in the surgical treatment of pulmonary tuberculosis. Especially clear cut are his indications and contraindications for those methods especially advocated by him. No less clear are the successive steps needed in the operative technic; at the same time, he calls our attention to the important fact that medical treatment must be instituted along with such surgery as may be indicated in each individual case. Under the caption of collapse therapy, Gravensen describes artificial pneumothorax, thoroscopy with cauterization, extrapleural thoracoplasty, pneumolysis and apicolysis and phrenicotomy. This is followed by a section on the surgical treatment of pleural tuberculosis. Here he deals with serous effusions, empyema and spontaneous pneumothorax. The volume is ably written. No question is left as to what to advise patients as to proper treatment. While not all would agree with him that the internist should also be trained in the surgical field, one cannot close this book without feeling that it is well worth while and that Dr. Gravensen has added much of value in his presentation of the subject.

PATHOLOGY AND BACTERIOLOGY OF THE EYE. By E. Treacher Collins, F.R.C.S., Consulting Surgeon to the Royal London Ophthalmic Hospital, and Stephen Mayou, F.R.C.S., Surgeon to the Central London Ophthalmic Hospital. Second edition. Cloth. Price, $10. Pp. 731, with 310 illustrations. Philadelphia: P. Blakiston's Son & Co., 1925.

The conception of this work is unique in ophthalmology in that it presents pathologic changes in the eye not as alterations of this or that tunic but as disturbed physiologic conditions and, again, in that it is not primarily a study of disease affecting the eye but a study of the organism, taken often as a whole, in one or another stage of its evolution or life history as influenced by untoward circumstances. Thus, there are no chapters on keratitis or iritis, but chapters on aberration in development, derangements of circulation, derangements from pernicious mechanical, chemical and other conditions, reactions of the organism to inflammation and, lastly, processes of involution and degeneration. At first the book seems very general and sketchy, but as one reads on the advantages of the method are appreciated, especially the avoidance of useless classification and confusing detail. However, most of us are trained in another school, and many will say that there is really not enough microscopic anatomy, cytology (except in conjunctivitis) and differential diagnosis. The consideration of suppurative disease of the cornea seems especially inadequate in view of an easy correlation of herpetic disease, dry abscess, aspergillus keratitis, disciform keratitis, ulcus serpens and ring abscess. On the other hand, the chapter on obstruction of the central vein is very good, as is that on inflammation in general and, in particular, the one on immunity. The presentation of the anatomic relations of disturbance of lymph circulation is excellent. The work makes no pretense to be encyclopedic, and the fact that it is a treatise on stages of evolution makes it difficult to use as a reference book. This shortcoming, however, is more than made up by the fact that its nature and its perspective render it peculiarly adapted to the use of those who are entering on the study of ophthalmology from the field of general practice or after a general course in medicine and a hospital service. There is no other book in the field of ophthalmology that will so interest and serve one thus placed; it might well become the key-book for the beginner in ophthalmology.

NEWER METHODS OF OPHTHALMIC PLASTIC SURGERY. By Edmund B. Spaeth, M.D., F.A.C.S., Major, M. C., U. S. A., Chief, Eye Clinic, Walter Reed U. S. Army General Hospital. Washington, D. C. Cloth. Price, $5 net. Pp. 258, with 170 illustrations. Philadelphia: P. Blakiston's Son & Co., 1925.

Plastic surgery is essentially individualistic, and consequently any writing dealing with that subject must treat either with basic principles or else with individual examples. But the latter are so diversified that they cannot assume any great rôle in a textbook. The author has kept these truisms well in mind and has succeded in producing a textbook of ophthalmic plastic surgery that occupies a lone position on the stage of ophthalmic literature. True enough, plastic surgery is touched on in various textbooks on ophthalmology and ophthalmic surgery, but only in a desultory manner; hence, the book devoted to the basic principles and various basic phases of plastic surgery within the realm of the ophthalmologist receives a warm welcome. There is a foreword by Brig. Gen. W. H. Wilmer, M. O. R. C., U. S. Army. Part I contains 106 pages, devoted to the basic principles of plastic surgery, to the types and technics of the various skin grafts, and to the appliances that are used to augment cosmetic correction that has been started through surgical procedure. This part is well illustrated both by diagrams and by actual photographs, and is written in a clear and convincing manner. Part II deals with individual basic operations, such as those aimed at the correction of entropion, trichiasis and other lid deformities, with canthoplasties and tear sac procedures, with the repair of defects from tumor losses, and finally with the various phases of physiotherapy about the eye. The illustrations of the second part are not so good as are those of the first part, but the text is written in just as clear an convincing a manner. The book making is good, and the proof reading has been thorough and careful. All in all, there is much of value in this book that will justify a careful perusal by even the most experienced ophthalmic surgeon.

OCULAR THERAPEUTICS. A Manual for the Student and the Practitioner. By Doctor Ernst Franke, A. O. Professor of Ophthalmology, University of Hamburg. Translated by Clarence Loeb, A.M., M.D., Oculist to the Michael Reese Hospital, Chicago. Cloth. Price, $3.50. Pp. 183. St. Louis: C. V. Mosby Company, 1925.

The first ninety pages of this valuable handbook are devoted to the general treatment that only too frequently the oculist has to utilize in conjunction with the local treatment of an ocular complaint. Tuberculosis comes first, and under this the various forms of tuberculin are dealt with at length from a purely practical standpoint. Syphilis is gone into at somewhat greater length and, as the author states, three substances come into consideration: mercury, arsphenamin and iodin. Serotherapy and organotherapy, protein therapy and paraspecific therapy receive somewhat shorter notice, as their value in ophthalmology has not yet been determined accurately. Ray and light treatment and physiotherapy are dealt with at somewhat greater length than is customary in a book originating in this country, and this very fact adds to the value of the book. The second part of the book deals with the local treatment of the eye, both chemical and mechanical, and the action of the various forms is discussed fully. A long list of the drugs that are used locally, with their action and dosage, is included and serves as a handy reference table for the busy oculist. The last part of the book is in the form of a synopsis of the various diseases of the eye and appendages and the usual treatment employed. This is more for the beginner in ophthalmology and, on the whole is the least useful portion. The diction savors somewhat of the "made in Germany" type, but this does not detract from the usefulness of the book.

THE PRINCIPLES OF PUBLIC HEALTH ENGINEERING. By Earle B. Phelps, B.S., Professor of Sanitary Science, College of Physicians and Surgeons, Columbia University. Cloth. Price, $3. Pp. 265, with 35 illustrations. New York: The Macmillan Company, 1925.

This book is prepared for two classes of students—the health officer who has had little or no engineering training, and the sanitary engineer with little or no knowledge of public health principles. In it are treated such topics as lighting, water supply and sewerage, atmospheric pollution, ventilation of buildings, and pasteurization of milk. The book is compact; the style, clear and concise. The proof-reading might be better, one important error being that on page 142, where aerobic is used for anaerobic. On page 158 "steam" is used in place of stream. There is occasionally a tendency to pedantry, as when "phreatic" water is used as synonymous with ground water. The discussion of air conditioning, including the control of atmospheric pollution, is particularly clear and outspoken. The author declares that "artificial humidification offers no particular advantages in the first place and, as practiced by the evaporation of water in the room from home-made or commercial 'humidifiers,' is generally futile." The dangerous effect of the gases from auto-

mobiles does not seem to be mentioned. The book as a whole is sure to be of real use to students of public health. The value of a second edition would be enhanced by the substitution for collateral reading of more recent references than those given at the end of the several chapters.

PERSONAL AND COMMUNITY HEALTH. By Clair Elsmere Turner, Associate Professor of Biology and Public Health in the Massachusetts Institute of Technology. Cloth. Price, $2.50. Pp. 426, with 53 illustrations. St. Louis: C. V. Mosby Company, 1925.

This book has been prepared primarily for college students and will be a welcome addition to the few discussions that ought to be placed in the hands of such students as a part of any general education. Professor Turner's book combines in one volume the two subjects of personal and community hygiene. The first six chapters deal with the health of the individual and include the hygiene of nutrition, action, nervous system and reproduction, and oral hygiene. The material is well presented and adequate for its purpose. Three chapters deal with disease prevention and immunity. It is doubtful whether the theories of immunity should have been included. They are more likely to confuse than interest the general student. The remainder of the book deals with community hygiene. The subjects are logically treated and accurately presented. Perhaps some criticism might be made of the relatively large amount of space devoted to sewage disposal compared to that given to food and water sanitation. The chapter on public health administration should be particularly commended. On the whole, Professor Turner has prepared an excellent and useful book.

THE NATURE OF ENZYME ACTION. By Sir W. M. Bayliss, M.A., D.Sc., F.R.S. Fifth edition. Boards. Price, $3.25 net. Pp. 200, with 8 illustrations. New York: Longmans, Green & Co., 1925.

This edition of Bayliss' monograph is organized like the fourth, but includes numerous pertinent references to work published since the preceding edition appeared. New material included in the text amounts, all told, to about ten pages incorporating significant material obtained from approximately forty new contributions to the field. New work reported has strengthened rather than modified Bayliss' general conclusions, which are expressed identically in the fourth and in this edition. Bayliss teaches that enzymes obey the usual laws of catalytic phenomena, particularly in heterogeneous systems in which reactions taking place are essentially at the surfaces of the colloidal enzymes. The author believes that reactions catalyzed by enzymes are reversible, the equilibrium point being determined by the effective concentration of water. In vitro, water necessarily predominates; hence, nearly complete hydrolysis is reached, whereas in vivo there exist mechanisms for the diminution of the effective concentration of water favorable to synthesis.

SIMPLIFIED NURSING. By Florence Dakin, R.N., Inspector of Schools of Nursing, State of New Jersey. Cloth. Price, $3. Pp. 499, with 77 illustrations. Philadelphia: J. B. Lippincott Company, 1925.

While there are available numerous outlines of nursing methods, few are so direct and practical in their instructions as the simple text presented by Miss Dakin. The author has been at particular pains to prepare a book that would be useful for high school classes, home nurses and practical nurses, as well as for trained attendants. She has collected all the essentials and carefully avoided going beyond the point of legitimate nursing practice. Her book is, in every sense of the word, a practical one.

KOMPENDIUM DER TOPISCHEN GEHIRN- UND RÜCKENMARKSDIAGNOSTIK. Kurzgefaste Anleitung zur klinischen Lokalisation der Erkrankungen und Verletzungen der Nervenzentren. Von Robert Bing, Professor an der Universität Basel. Sixth edition. Paper. Price, 9,90 marks. Pp. 242, with 102 illustrations. Berlin: Urban & Schwarzenberg, 1925.

Practically no difference is apparent in the text of this edition and the previous one of 1922. However, further improvement has been made in the numerous and excellent diagrams and illustrations. The work is more than ever a standard guide to the difficult paths leading to correct topical diagnosis of lesions of the brain and cord.

Medicolegal

Physician Without Authority to Employ Another

(Johnson et al. v. Roberts (Ala.), 103 So. R. 563)

The Supreme Court of Alabama, in reversing a judgment that was rendered in favor of plaintiff Roberts, says that an employee of the defendants, partners trading as Johnson & Thompson, was injured in his foot or ankle while working at his employment. The employee testified that Mr. Thompson had him removed to a hospital and engaged a physician to attend him, telling the physician that the defendants would pay for his services and not to leave a stone unturned in attempting to save the foot. The physician testified that the defendants never made any deal with him, but kept sending patients to him; that Mr. Thompson brought this injured employee to his office; that he examined the foot, found a fracture, and told Mr. Thompson that he (the physician) would have to take the man to a hospital to find out what was necessary to be done; that Mr. Thompson told him to do everything necessary; that he tried to reduce the fracture, had another physician try to do it, and then called in the plaintiff, to whom he turned over the case. The defendants knew nothing of the plaintiff's services until they received his bill for $360, and they never agreed to or ratified his employment. They refused to pay the bill. He sued them for $360 with interest, and the jury returned a verdict in his favor for $434.40. But the plaintiff had no contract, express or implied, with the defendants to perform the services; he was employed by the other physician, without authority, express or implied, from the defendants, to render these services, and the defendants were not liable for his compensation.

That the physician who called in the plaintiff was employed by the defendants to take care of the injured employee and "to do everything necessary," and "not to leave a stone unturned in attempting to save his foot," gave him no express or implied authority to employ the plaintiff to assist him, nor to turn the case over to the plaintiff and let him perform the operation and services at the expense of the defendants. He had no express authority to employ the plaintiff, and his employment to treat the injured employee and do all that was necessary gave him no implied authority to employ the plaintiff to do so at the expense of the defendants. The physician, in this employment to treat the injured employee, was an independent contractor without any control or suggestion by the defendants as to what he should do for the man, or how he should treat him. He was free to treat the case as he should choose, but he was not the agent of the defendants in so doing, and he was not their agent by this employment and contract.

Right to Show Feeling of Physician as Witness

(Central Lumber Co. v. Porter (Miss.), 103 So. R. 506)

The Supreme Court of Mississippi, Division B, says that on the trial of this personal injury case plaintiff Porter introduced as a witness his physician, who had formerly had a position with the defendant company and who it seemed had been displaced or removed from such position as the company's surgeon by the superintendent of the company. The physician was the only physician and surgeon who testified as to the extent and character of the plaintiff's injuries. The defendant attempted, on cross-examination, to interrogate the physician with reference to the state of his feeling toward the superintendent and the company. The physician was asked in how many cases he had testified in which the superintendent was concerned and his company was defendant; had not he himself sued the superintendent for $100,000, and did he not feel bitter toward him; was it not a fact that he had made application to the superintendent within a short time to be put back on this job, and been told that he could not have it; and was it not a fact that he was unfriendly toward the defendant company? The defendant insisted that it was error to refuse to permit it to propound these questions to the physician; that it had a right to interrogate him for

the purpose of showing his feeling, bias, prejudice, etc. It was manifest from the record that the physician's testimony was highly important in determining the extent of the injury. Much would depend on his attitude as to fairness and his unbiased attitude in the case. The value to be given to testimony of this kind depends to a great extent on the attitude and fairness of the witness. The supreme court thinks that the questions should have been permitted, and that it was error for the court below to exclude them. It could not be said what effect this might have on the amount of the verdict. It was important on the measure of damages; wherefore the judgment in favor of the plaintiff is reversed as to the amount of the damages, and the case is remanded for a new trial as to damages alone.

Value of Last 10 Per Cent. of Vision

(Chicago Bridge & Iron Co. v. Industrial Commission et al. (Ill.), 147 N. E. R. 375)

The Supreme Court of Illinois, in affirming a judgment which affirmed an award of compensation by the industrial commission, says that the award was for the loss of the sight of an eye by an employee of the company. It was admitted that the award would be correct if it were not for the fact that the employee had received compensation for the permanent loss of 90 per cent. of the use of the same eye resulting from another injury, incurred three years before, while in the employ of the same company. The company contended that, because only 10 per cent. of vision remained, its liability was limited to a payment for the loss of that fraction. The workmen's compensation act of Illinois provides that an employee shall receive "for the loss of the sight of an eye or for the permanent and complete loss of its use 50 per centum of the average weekly wage during 100 weeks." There is no requirement in the act that the eye be perfect, nor is there any provision for reducing the amount of compensation in the proportion the vision is defective. The compensation fixed by the act is for the loss of a member of the body, and the same compensation is due and payable whether the eye lost is the eye of a youth or of an old man, an eye with perfect vision or one imperfect by reason of natural defects or a previous injury. The fact that the same employer has paid compensation to the injured employee for a loss arising out of another injury has no bearing on the amount of compensation to be paid for the loss arising out of this injury, and the same rule applies when the payments for the first injury were made by a different employer. A sightless eyeball is not an eye, as that term is used in the act, and an award for a disability caused by an injury which required the removal of a sightless eyeball would be made under paragraph (c) and not paragraph (e) of Section 8.

It was conceded that the employee had at least 10 per cent. of vision when he received his last injury, which necessitated the removal of the eyeball—that is, he could see with his defective eye at a distance of 20 feet what a person with normal vision could see at a distance of 200 feet. For many purposes this amount of vision was as useful to him as normal vision. It is impossible for any human agency to measure the value to an individual of the last 10 per cent. of vision remaining in his eyes. Whether the defect in vision is caused by disease or accident or is natural, the reduced amount of vision is all the vision the individual has, and when it is destroyed the use of his eye is destroyed. The legislature has fixed an arbitrary amount to be paid as compensation in such cases, and that amount is due and payable whenever a functioning eye is lost, though the eye may be infirm.

Failure to Protect Bandages Against Urination

(Lolli v. Gray (N. J.), 128 Atl. R. 256)

The Court of Errors and Appeals of New Jersey, in reversing a judgment which the plaintiff obtained for $5,000 for his daughter, aged 12 years, and for $360 in his own behalf for his expenditures in endeavoring to have his daughter cured of her ailment, says that the daughter fell over a stump and injured her left leg near the hip. She was taken to a hospital, and the defendant was called to attend her. He diagnosed the injury as a fractured femur and treated it accordingly. Several days after the operation, the patient involuntarily urinated one night and wet the bandages. Immediately thereafter the defendant redressed the wound, taking off the soiled bandages, putting on clean sterilized ones and using antiseptics. The case on the argument seemed to narrow down to the question of whether the defendant was negligent in not protecting the bandages on the injury with a rubber cloth to prevent infection from urination. However, as the child did not wet herself by urination but once, and that was twelve or fourteen days after she had been in the hospital, and several days after the operation, the defendant doubtless was not required to anticipate that she would do that thing. She was beyond the age when involuntary urination is apt to take place. Furthermore, the defendant testified that there was a disadvantage in using rubber cloth over bandages. All the medical testimony, and that of the nurses, was that the defendant's treatment was in accordance with standard medical and surgical practice. The conclusion of the court is that the motion which was made for the direction of a verdict for the defendant should have been granted, and that its refusal was error. A physician and surgeon, in the absence of express contract, is required to exercise only the skill and care ordinarily possessed and exercised by others in the profession.

Liability for Injury Aggravated by Treatment

(Fright v. Blakeslee et al. (Conn.), 128 Atl. R. 113)

The Supreme Court of Errors of Connecticut, in holding that the defendants had no reasonable ground of appeal from the denial of a motion to set aside a verdict that was rendered in favor of the plaintiff in this personal injury case, says that the defendants offered in evidence the complaint in an action by this plaintiff against a physician who treated her for the injury for which she here sued, in which complaint she alleged that the physician did not use due and proper skill and care in such treatment, the defendants contending that this tended to prove that the plaintiff's condition was due to the physician's negligence. The allegations were in the nature of admissions by the plaintiff, and hence an instruction was incorrect which excluded from the consideration of the jury the allegations made in such complaint against the physician. But it was not an error which could have prejudicially affected the defendants' case. If the jury found the defendants legally responsible for the accident to the plaintiff, they were responsible for the injuries proximately resulting therefrom to her. If she exercised reasonable care in selecting a physician to treat her, and his treatment added to the injuries resulting from the accident, the defendants would be liable for all such injuries from which she suffered as a result of his treatment which had not been materially contributed to by the plaintiff

Society Proceedings

COMING MEETINGS

American Pharmacological Society, Cleveland, Dec. 28-31. Dr. F. D. Brown, University of Minnesota, Minneapolis, Minn., Secretary.
American Physiological Society, Cleveland, Dec. 29-31. Dr. W. J. Meek, Science Hall, Madison, Wis., Secretary.
American Society for Experimental Pathology, Cleveland, Dec. 28-30. Dr. E. B. Krumbhaar, Philadelphia General Hospital, Philadelphia, Sec'y.
American Society of Biological Chemistry, Cleveland, Dec. 28-30. Dr. D. W. Wilson, University of Pennsylvania School of Medicine, Philadelphia, Secretary.
District of Columbia, Medical Society of, Washington, D. C., Dec. 2. Dr. C. B. Conklin, 500 Medical Science Bldg., Washington, D. C., Sec'y.
Federation of American Societies for Experimental Biology, Cleveland, Dec. 29-31. Dr. Walter J. Meek, Science Hall, Madison, Wis., Sec'y.
Philippine Islands Medical Association, Manila, Dec. 16-19. Dr. Isabelo Concepcion, College of Medicine and Surgery, Manila, Secretary.
Porto Rico, Medical Association of, Coami, Dec. 14-15. Dr. R. M. Suarez, Box 314, Santurce, Secretary.
Radiological Society of North America, Cleveland, Dec. 7-11. Dr. Robert J. May, St. Luke's Hospital, Cleveland, Secretary.
Society of American Bacteriologists, Madison, Wis., Dec. 29-31. Dr. James M. Sherman, Cornell University, Ithaca, N. Y., Secretary.
Southern Surgical Association, Louisville, Ky., Dec. 15-17. Dr. Hubert A. Royster, 423 LaFayette Street, Raleigh, N. C., Secretary.
Western Surgical Association, Wichita, Kan., Dec. 18-19. Dr. Harry P. Ritchie, Lowry Building, St. Paul, Minn., Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL for a period of three days. No foreign journals are available prior to 1920, nor domestic prior to 1923. Periodicals published by the American Medical Association are not available for lending, but may be supplied on order. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested).

Titles marked with an asterisk (*) are abstracted below.

American Journal of Tropical Medicine, Baltimore

5: 319-384 (Sept.) 1925

Comparative Helminthology as Aid in Solution of Ethnologic Problems. S. T. Darling, New York.—p. 323.

*Amebic Abscess of Liver. W. J. MacNeal and P. Klemperer, New York. —p. 339.

Leprosy Problem in Philippine Islands. G. R. Callender, Washington, D. C.—p. 351.

Mosquito Repellents. C. W. O. Bunker and A. D. Hirschfelder, Minneapolis.—p. 359.

Amebic Abscess of Liver.—MacNeal and Klemperer present a case of amebic dysentery with complicating liver abscess and fatal termination, fairly typical in clinical history and course, unrecognized until the necropsy. The disease was apparently contracted in New York.

American Review of Tuberculosis, Baltimore

12: 1-86 (Sept.) 1925

*Symptoms of Intestinal Tuberculosis. R. J. Erickson, Trudeau, N. Y. —p. 1.

*Effect of Ultraviolet Light on Intestinal Tuberculosis. R. J. Erickson, Trudeau, N. Y.—p. 15.

*Healed Tuberculous Ulcers of Intestine and Calcium Chlorid Treatment. E. H. Roberts, Denver.—p. 29.

*Excretion of Specific Substances of Tubercle Bacilli in Urine. L. Dienes and J. Freund, Asheville, N. C.—p. 35.

Resistance of Specific Properties of Tubercle Bacillus to Sodium Hydroxid and Hydrochloric Acid. L. Dienes and E. W. Schoenheit, Asheville, N. C.—p. 41.

Potency of Watery Extract of Saprophytic Acid Fast Bacilli as Tuberculins and as Antigens in Complement Fixation. L. D. Scheff, Asheville, N. C.—p. 45.

*Studies in Tuberculosis. III. Clinical Significance of Constitutional Reactions Following Cutaneous Tuberculin Tests. F. Eberson, San Francisco.—p. 49.

*Molds in Sputum in Pulmonary Tuberculosis. M. E. Lapham, Highlands, N. C.—p. 64.

Resistance of Albino Rat to Infection with Tubercle Bacilli. G. G. Ornstein and M. M. Steinbach, New York.—p. 77.

Symptoms of Intestinal Tuberculosis.—The material analyzed by Erickson consisted of 100 positive cases, and for comparison forty cases of nontuberculous intestinal disease complicating pulmonary tuberculosis. In 59 per cent. of the positive cases this complication occurred by the end of the second year and in 81 per cent. by the end of the third year. A history of previous intestinal symptoms was present in 58 per cent., most common of which were chronic constipation and indigestion. Intestinal tuberculosis had an insidious onset in one third of the cases and a clearly defined onset in two thirds. Abdominal pain was present in 71 per cent. of the positive cases. It occurred most commonly after meals, was cramping in character, was localized in the right lower quadrant and was accompanied by intestinal gas. Diarrhea was present in 47 per cent. of the cases. It occurred at any time of the day but somewhat more frequently in the morning. Bleeding from the intestine occurred in a tenth of the cases, and was a highly suggestive symptom when proved not to be due to hemorrhoids. Nausea was present in 66 per cent. It occurred most frequently after meals, and was accompanied by vomiting in one half of the cases. General digestive disturbances were the most frequent initial symptom and were present eventually in 47 per cent. They were most varied in type, the most unusual being marked loss of appetite or aversion for food, distress after meals and "sour stomach." They thus began early and were persistent symptoms. Constipation was twice as frequent as an initial symptom, and also during the course of the disease, in the positive as in the negative cases. Alternation of constipation and diarrhea was present in 12 per cent. It had no special diagnostic significance. Constitutional symptoms out of proportion to the severity of the pulmonary disease were a highly suggestive feature in 17 per cent.

Effect of Ultraviolet Light on Intestinal Tuberculosis.—In a series of eighty-one cases of intestinal tuberculosis complicating pulmonary tuberculosis reviewed by Erickson, 85.2 per cent. had a favorable result following the use of ultraviolet light, as judged by entire relief or definite improvement in symptoms, and 14.8 per cent. had no result or an unfavorable one. Of these cases, 24.7 per cent. had entire relief of symptoms, 47 per cent. were very much improved, and 13.5 per cent. had definite though less improvement. This symptomatic cure or improvement has persisted in 85 per cent. of the sixty-nine cases for four months, in 50 per cent. for a year or so, and in 12 per cent. for from three to four years. Pain, nausea and vomiting seem to be most effectively relieved, diarrhea is more persistent, and general digestive disturbances are still more persistent. It thus seems that ultraviolet light ray treatment is of definite value for the relief of symptoms in intestinal tuberculosis.

Calcium Chlorid in Treatment of Tuberculous Intestinal Ulcers.—Roberts presents a case of healed ulcers in tuberculous intestine to emphasize the fact that calcium chlorid has a definite place in the treatment of tuberculous enteritis and the treatment in this case extended over a period of 102 weeks in all, consisting of weekly injections of 5 c.c. of the 5 per cent. solution intravenously. This is the second case of healed intestinal ulcers in a patient dying of pulmonary tuberculosis.

Specific Substances of Tubercle Bacilli.—All attempts made by Dienes and Freund to demonstrate the presence of substances possessing a tuberculin effect on tuberculous guinea-pigs, either in the urine of patients with extensive tuberculosis or in the urine of patients receiving during specific therapy considerable amounts of specific substances, were negative. No demonstrable amounts of the specific substances were present in the blood serum and urine of guinea-pigs killed by the injection of watery extract of tubercle bacilli. The specific substances were present in great amount in the urine of normal guinea-pigs injected with the same amount of watery extract. From these observations, and from general considerations concerning the fate of antigens in the sensitized body, it appears to be improbable that tuberculosis patients excrete substances having the biologic effects of tuberculin in amounts accessible to observation, and the skin test observed with the urine of patients cannot be interpreted as a specific reaction.

Constitutional Reactions Following Cutaneous Tuberculin Tests.—A series of forty-one cases was studied by Eberson from the standpoint of constitutional reactions following diagnostic cutaneous tuberculin tests. All of these patients had positive clinical histories, physical and roentgen-ray findings, and a definite history of exposure to tuberculosis. In 90 per cent. of the cases, constitutional reactions occurred after cutaneous tests with tuberculin. Local reactions were usually violent but not necessarily correlated with the intensity of the constitutional reaction. Focal reactions were observed in all cases with lymph node involvement and with tuberculosis of the bones, joints or intestine. In the absence of definite "adult" parenchymal tuberculosis, the constitutional reaction was correlated uniformly with clinical tuberculosis elsewhere in the body. Roentgenologic findings offered confirmatory evidence of the significance of a constitutional reaction in juvenile tuberculosis. All of these young patients had enlarged hilum lymph nodes; tracheobronchial lymph nodes were present in 64 per cent. and primary foci in 36 per cent. An analysis of typical cases in children and in adults suggests that a constitutional reaction means clinical tuberculosis, regardless of the roentgen-ray picture, when the roentgenologic diagnosis of a focal reaction is based solely on a change in the lung tissue. As an aid in the diagnosis of juvenile tuberculosis, it is suggested that the occurrence of a constitutional reaction following a tuberculin test (particularly when the cutaneous technic is used), and the eliciting of a suggestive clinical history warrants a positive diagnosis which points to clinically active disease in some focus-bone, joint, lymph node, intestine or hilum lymph nodes.

Molds in Tuberculous Sputum.—Lapham has found molds seemingly to be responsible for cough and other symptoms suggestive of pulmonary tuberculosis; therefore she feels that every case of tuberculosis should be studied just as much to recognize or exclude the presence of molds as that of tubercle bacilli.

Archives of Neurology and Psychiatry, Chicago

14: 435-580 (Oct.) 1925

Nutrition and Nerves. F. Peterson, New York.—p. 435.
*Cerebrospinal Fluid Pressure from Clinical Point of View. J. B. Ayer, Boston.—p. 440.
Trial by Jury. J. H. Lloyd, Philadelphia.—p. 449.
*Comparison of Gold Chlorid, Benzoin and Mastic Tests on Cerebrospinal Fluid. J. R. Cockrill, Boston.—p. 455.
*Effect of Organic Brain and Spinal Cord Changes on Subarachnoid Space, Choroid Plexus and Cerebrospinal Fluid. G. R. Hassin, Chicago.—p. 468.
Changes in Size and Relations of Lateral Ventricles in Tumors of Brain. C. A. Elsberg and S. Silbert, New York.—p. 489.
Work and Workers of Philadelphia Neurological Society from 1914 to 1924. C. K. Mills, Philadelphia.—p. 502.
Cerebrospinal Fluid Chlorids. F. Fremont-Smith and M. E. Dailey, Boston, Mass.—p. 509.
Ventriculography; Analysis of 392 cases. F. C. Grant, Philadelphia.—p. 511.

Cerebrospinal Fluid Pressure.—The technic and value of manometric study of the cerebrospinal fluid was studied by Ayer. He says that while initial pressure readings are often of real diagnostic value, increasing interest attaches to the behavior of fluid pressure under the influence of certain physiologic acts, especially when pressure observations include more than one portion of the ventriculosubarachnoid system. In this manner pressure studies form the basis of an understanding of the dynamic physiology of the fluid circulation.

Tests on Cerebrospinal Fluid.—Four hundred colloidal—gold, benzoin and mastic—tests made by Cockrill show sixteen dissimilar reactions and 384 similar reactions in all three tests. Comparing the colloidal benzoin and mastic with the colloidal gold, the results indicate that the benzoin and mastic are reliable tests of approximately equal value. The technic of the benzoin is simpler. This indicates that the benzoin is the colloidal test to use in the routine examination of cerebrospinal fluid. In special cases, such as meningitis, and multiple sclerosis, requiring the original benzoin test of sixteen tubes, the colloidal gold is preferable.

Source of Cerebrospinal Fluid.—The secretion theory of the cerebrospinal fluid holds that this body fluid is largely elaborated by the choroid plexus. The excretion or absorption theory, in contrast, holds that the fluid comes from the tissue fluids of the brain. The secretion theory is mainly based on experimental and anatomic data, which may equally well be explained by the excretion theory. The latter renders understandable the changes in the subarachnoid spaces and choroid plexus in various lesions of the brain or cord. As the secretion theory does not explain the relationship between the brain and subarachnoid changes, Hassin says, it must be assumed that the cerebrospinal fluid is produced by the brain tissues themselves, the villi of the choroid, like those of the arachnoid, being organs, not of secretion, but of excretion or absorption of the waste from the spinal fluid.

Archives of Otolaryngology, Chicago

2: 321-416 (Oct.) 1925

Local Immunization of Tissues of Nose, Throat and Ear by Bacterial Vaccines. H. M. Hays, New York.—p. 321.
Audion Bulb Circuits in Otologic Practice. I. H. Jones and V. O. Knudsen, Los Angeles.—p. 335.
Means and Methods of Testing in Aural Disease. R. Lake, London, England.—p. 340.
Endoscopy as Aid to General Diagnosis in Diseases of Throat and Thorax. E. A. Looper, Baltimore.—p. 350.
Choked Disks; in Association with Surgical Mastoid Disease Without Apparent Intradural Involvement. H. I. Lillie, and W. I. Lillie, Rochester, Minn.—p. 355.
*Bacteremia Due to Tonsillectomy Complicated by Mastoiditis. V. Dabney, Washington, D. C.—p. 362.
Spontaneous Nystagmus. B. F. Glowacki, Detroit.—p. 365.
*Papilledema of Otitic Origin. L. E. White, Boston.—p. 371.
Acute and Chronic Suppurative Otitis Media Including Acute Infection of Blood Stream. S. J. Kopetzky, New York.—p. 379.

Bacteremia Due to Tonsillectomy.—Dabney reports a case which presented every classical symptom of a sinus thrombosis in pronounced degree (temperature range of 97.2 to 104.4 F., chills, sweats, otorrhea, history of recurrent earache, bacteremia), and yet there was no such condition. On the other hand, a mastoidectomy was definitely indicated and justified in the light of the pathologic changes found in the bone at operation.

Papilledema as Diagnostic Aid.—White shows that when present in meningitis, brain abscess and lateral sinus infection, papilledema is a valuable diagnostic aid but its absence does not exclude intracranial involvement. There was papilledema in 58 per cent. of the cerebellar abscesses, in 60 per cent. of the temporosphenoidal abscesses, in 44 per cent. of the meningitis cases and in 40 per cent. of the lateral sinus infections. The fundi were normal in 50 per cent. of the meningitis cases with spinal fluid under pressure. Streptococci were the only bacteria present in the cases with papilledema. As a preliminary to a lumbar puncture on a patient with marked papilledema, the intracranial pressure should be lowered by drainage of the lateral ventricle. Increasing edema of the optic nerve is usually an unfavorable symptom.

Atlantic Medical Journal, Harrisburg, Pa.

29: 1-52 (Oct.) 1925

Medical Society of State of Pennsylvania; Its Past and Future. I. G. Shoemaker, Reading, Pa.—p. 1.
*Infarction of Myocardium. F. A. Willius, Rochester, Minn.—p. 9.
Mental Clinics. W. C. Sandy, Harrisburg, Pa.—p. 13.
Newer Methods of Determining the Employer's Liability in Eye Injuries. G. H. Shuman, Pittsburgh.—p. 16.
Oral Surgical Prosthesis. A. B. Vastine, Danville, Pa.—p. 18.
*Suppurative Orchitis and Embryonal Adenocarcinoma. W. H. Haines and N. Mumey, Philadelphia.—p. 19.

Infarction of Myocardium.—Two cases of acute coronary obstruction are reported by Willius in which recovery occurred, and in which detailed electrocardiographic study was carried on from the time of the occlusion throughout the period of convalescence.

Suppurative Orchitis.—A résumé of the case reported by Haines and Mumey would suggest that the condition began after an infectious orchitis, following influenza. Its rapid onset and insidious character, accompanied by a suppurative process, made the diagnosis a difficult task, which, after all, did not interfere with the speedy removal of a very malignant tumor three and one half weeks from the time of discovery. The patient is in good health, and there has been no recurrence eighteen months after operation.

Boston Medical and Surgical Journal

193: 659-704 (Oct. 8) 1925

*Treatment of Scarlet Fever with Antitoxin. F. G. Blake and J. D. Trask, New Haven, Conn.—p. 659.
Surgery of Carcinoma of Stomach. F. B. Lund, Boston.—p. 666.
Congenital Syphilis as Cause of Mental Deficiency; I. Statistics. N. A. Dayton, Wrentham, Mass.—p. 668.
*Id. II. Analysis of Cases. N. A. Dayton, Wrentham, Mass.—p. 671.
Use of Sodium Tetraiodophenolphthalein in Cholecystography. R. R. Wheeler and I. K. Bogan, Boston.—p. 676.
How Adequately Can Social Service Solve Community Care of Feebleminded? H. M. Watkins, Boston.—p. 678.

Treatment of Scarlet Fever with Antitoxin.—Blake and Trask conclude from their experience that scarlatinal antitoxin in proper amount is a specific and prompt cure for uncomplicated scarlet fever. It indirectly benefits septic complications during the acute stage of scarlet fever, presumably by curing the specific toxemia. It has not been possible to demonstrate that it possesses any therapeutic value in postscarlatinal sepsis after the rash has faded. To be therapeutically efficient in reasonable dosage, an antiscarlatinal serum should contain at least 12,500 minimal blanching doses of antitoxin per cubic centimeter or be able to neutralize at least 10,000 skin test doses of toxin per cubic centimeter. The amount of antitoxin required to cure scarlet fever promptly and with certainty by intramuscular injection varies from 3,000 units to 12,000 units (30 to 120 c.c. of a serum which neutralizes 10,000 skin test doses of toxin per cubic centimeter) depending on the size of the patient and

the severity of the disease. To obtain the best therapeutic results, the full amount of antitoxin required in each case should be estimated and given at once as soon as diagnosis is made.

Congenital Syphilis as Cause of Mental Deficiency.—A review made by Dayton of 9,183 patients with mental defect given the Wassermann test, revealed 497 with a positive reaction, a percentage of 5.4 supposedly due to syphilis. A review of 16,156 cases of nondefective children given the Wassermann test revealed 699 with a positive reaction, or 4.3 per cent. In the 1756 cases at the Wrentham State School tested by the same means, sixty, or 3.4 per cent., reacted positively. From these statistics it would appear that congenital syphilis is not of great importance as a causative factor in mental deficiency.

193: 707-756 (Oct. 15) 1925

*Reduction of Death Rate from Diabetes Particularly from Diabetic Coma in Massachusetts. E. P. Joslin, Boston.—p. 707.
*Glucose Infusions and Insulin in Preparation of Poor Surgical Risks. D. Fisher and E. H. Mensing, Milwaukee.—p. 712.
Surgery of Abdominal Hernia. W. Van Hook, Chicago.—p. 714.
*Appendiceal Lithiasis; Case. V. Vermooten, New Haven, Conn.—p. 718.
*Acute Appendicitis During Labor; Operation; Recovery. D. N. Barber and J. R. Miller, Hartford, Conn.—p. 720.
Relation of Clean Milk to Progress in Infant Feeding. J. L. Morse, Boston.—p. 721.
Blood Transfusion. E. A. Herr.—p. 723.
*Vitamin Potency of Cod Liver Oils. VXII. Salmon Body Oil. A. D. Holmes and M. G. Pigott, Boston.—p. 726.
Special Periosteotomes for Cleft Palate Work. B. B. Cates.—p. 728.
Mental Wounds. C. A. Bonner.—p. 729.

Coma in Diabetes.—Coma is the chief cause of death in diabetes in Massachusetts, Joslin says. It occurs so frequently and yet can be so successfully treated that the number of coma deaths should be greatly reduced. Cardiorenal complications stand next to coma in importance. Tuberculosis still claims a certain percentage of the deaths, probably about 6 per cent., but no more than the standard rate for tuberculosis in the community at large. The onset of tuberculosis is usually unsuspected, so slight are the symptoms and insignificant the signs. Deaths from carbuncles are pathetic. Most fatalities could be avoided with early energetic treatment carried out in a hospital by surgeons who will work in close conjunction with physicians. The mortality is distressing in cases treated at the office and in neglected cases. Crucial incisions must reach to the sound tissue, the flaps should be turned up and the necrotic tissue scarified repeatedly so that after a few days of packing with poultices of normal saline solution sloughing can easily ensue. Ultraviolet rays help in the convalescence.

Glucose and Insulin in Preparation of Poor Surgical Risks.—Fisher and Mensing cite two cases. One of these shows how a severe preoperative acidosis requiring immediate surgery was quickly transformed into a good risk by the use of glucose infusions and insulin. The second case is a typical example of the preoperative preparation of a patient in shock.

Appendical Lithiasis.—In Vermooten's case the appendix contained four calculi, composed largely of calcium phosphate but containing small quantities of cholesterol, some silica and a trace of bile pigment.

Acute Appendicitis During Labor.—The case cited by Barber and Miller was one of mild but definite acute appendicitis occurring at the onset of labor in which a routine appendectomy, followed by breech extraction under ether, gave very satisfactory results.

Vitamin Potency of Salmon Oil.—It is evident from the results obtained by Holmes and Pigott that the vitamin A potency of the salmon body oil is not comparable with that of medicinal cod liver oil made by the steam process.

Georgia Medical Association Journal, Atlanta

10: 399-440 (Oct.) 1925

Problems of Pathology of Biliary Tract. W. H. Lewis, Rome.—p. 399.
Alkalosis Acidosis; Cases. J. W. Daniel, Savannah.—p. 404.
Pellagra; Treatment. L. L. Whiddon, Ocilla.—p. 409.
Hemorrhage in Pulmonary Tuberculosis. C. H. Holmes, Atlanta.—p. 414.

Illinois Medical Journal, Oak Park

48: 253-336 (Oct.) 1925

Practical Application of Radiation Therapy in Conjunction with Surgery. B. C. Cushway, Chicago.—p. 264.
Epidermophytosis. C. J. White and A. M. Greenwood, Boston.—p. 269.
County Society and County Secretary's Relation to State Secretary. W. D. Chapman, Silvis.—p. 278.
Relation of Psychotic and Neurotic Disturbances to Head Injuries. G. W. Hall, Chicago.—p. 279.
Sources of Infection. Cases and Carriers. D. M. Griswold, Iowa City.—p. 286.
Prevention of Goiter. E. P. Sloan, Bloomington.—p. 290.
Diabetes Mellitus Since the Advent of Insulin. G. Parker, Peoria.—p. 293.
Surgical Treatment of Pulmonary Suppuration. R. B. Bettman, Chicago.—p. 297.
Public Health and Medical Profession. W. S. Keister, Decatur.—p. 300.
Adjustable Splint for Fractures of Nose. S. Salinger, Chicago.—p. 304.
*Prevalence of Goiter in Illinois. J. H. Beard, Urbana.—p. 306.
Plastic Induration of Penis and of Corpus Cavernosum: Case. W. A. Marshall, Chicago.—p. 311.
Head Injuries. H. R. Kenny, Chicago.—p. 313.
Systemic Aspects of Achylia Gastrica. L. Crummer, Omaha.—p. 317.
Traumatism of Head and Brain in Civil Practice. G. M. Hackler, Dallas, Texas.—p. 322.
Treatment of Burns. B. E. Sayre, Chicago.—p. 325.
Clinical Ramifications of Throat Infections in Children. G. L. Kaufmann, Chicago.—p. 327.
Lung Abscess. B. Chapman, Chicago.—p. 330.

Prevalence of Goiter in Illinois.—On the basis of 15,154 physical examinations of which 10,829 were men and 4,325 were women high school graduates distributed over Illinois, it was found by Beard that the mean average of thyroid enlargement of the women for a five year period was 24.5 per cent.; the men, 4.6 per cent. The attempt is made to indicate the prevalence of endemic goiter in Illinois. The statistics presented are based on the work of forty or more well trained doctors, experienced in the making of physical examinations. Simple goiter is very common among boys and girls of high school age in Illinois. Approximately 5 per cent. of the former and 25 per cent. of the latter have some hypertrophy of the thyroid gland. In Illinois, the incidence of goiter tends to decrease from the north southward and from the east westward. In this state there seems to be some tendency for goiter prevalence and population density to show coincident rise and fall. There is not much difference in the prevalence of goiter in rural and urban sections. Although the greatest population density is in the northern part of the state, the section with the highest goiter incidence, fewer women in the city than in the country have goiter. This fact, taken in connection with the decrease in thyroid enlargement in both men and women in the tier of counties containing Cook County, may be an expression of food variation, greater accessibility to sea food, and better medical attention to be found in cities. In the comparison of the occurrence of goiter in men and in women in the city and in the country, it is not apparent why, in each instance, the prevalence in men should be the reverse of that in women, who are peculiarly susceptible to iodin deficiency. There may be some dietetic difference not evident.

Indiana State Medical Association Journal, Ft. Wayne

18: 375-406 (Oct. 15) 1925

Indiana State Medical Association. E. M. Shanklin, Hammond.—p. 375.
Otalgia. C. N. Howard, Warsaw.—p. 378.
Cancer of Sigmoid. J. Y. Welborn, Evansville.—p. 380.
Fatigue as Factor in Disease. D. O. Kearby, Indianapolis.—p. 382.

Iowa State Medical Society Journal, Des Moines

15: 519-572 (Oct. 10) 1925

Pioneers in Preventive Medicine. J. McIntosh Wright, Clear Lake.—p. 519.
Branchial Cysts; Case. I. N. Crow, Fairfield.—p. 524.
Laryngeal Tuberculosis. C. C. Jones, Des Moines.—p. 529.
Foreign Bodies in Air and Food Passages; 43 Cases. T. R. Gittins, Sioux City.—p. 532.
Study of Nervous System with View to Understanding Otitic Pain. C. B. Taylor, Ottumwa.—p. 537.
Diatheramy in Types of Faulty Hearing. E. G. Linn, Des Moines.—p. 540.
Classification of Cardiac Diagnosis. M. M. Myers, Des Moines, and P. D. White, Boston.—p. 542.
Goiter. W. I. Terry, San Francisco.—p. 544.
Infection, Its Relation to General and Local Diseases. C. H. Mayo, Rochester, Minn.—p. 546.

Functions of Skin and Their Relation to General Medicine. E. F. Muller, New York.—p. 548.
Intestinal Protozoa and Chronic Diseases; Chronic Arthritis. J. V. Barrow and E. L. Armstrong, Los Angeles.—p. 553.
Why Do We Have Hemorrhoids? C. J. Drueck, Chicago.—p. 558.
Osteomyelitis of Mandible. R. A. Fenton, Iowa City.—p. 560.

Journal of Bacteriology, Baltimore

10: 413-502 (Sept.) 1925

*Clostridium Multifermentans in Chocolate Cream Candies. G. A. Hill, Camp Kearny, Calif.—p. 413.
Relation of Temperature to Growth of Thermophilic Bacteria. F. W. Tanner and G. I. Wallace, Urbana, Ill.—p. 421.
Hydrogen Sulphid Production by Anaerobic Spore-Bearing Bacteria. M. C. Kahn, New York.—p. 439.
Further Clinical Characteristics Differentiating B. Chauvoei from Other Anaerobes. A. S. Schlingman and A. W. Haines, Detroit. —p. 449.
Indol Studies. W. L. Kulp, New Haven, Conn.—p. 459.
Bacterial Variation. J. Orskov and A. Larsen, Copenhagen.—p. 473.
Microbic Heredity. I. Primitive Form of Sexuality (Zygospore Formation) in Colon-Typhoid Group. R. R. Mellon, Rochester, N. Y. —p. 481.

Clostridium in Chocolate Candy.—Hill presents a description of a saccharolytic anaerobe which was found to be uniformly present in cracked chocolate creams. It would seem probable that most of the spoilage of chocolate creams through splitting is due to a gas-forming micro-organism whose morphology and cultural characteristics correspond to those of *Clostridium multifermentans* (Stoddard).

Journal of Biological Chemistry, Baltimore

65: 279-554 (Sept.) 1925

Preparation, Solubility and Specific Rotation of Wheat Gliadin. D. B. Dill and C. L. Alsberg, Stanford University, Calif.—p. 279.
Studies in Carbohydrate Metabolism. II. Investigations Into Mutarotation of β-Glucose Under Various Conditions. C. Lundsgaard and S. A. Holbøll, Copenhagen, Denmark.—p. 305.
Id. III. Investigations Into Nature of Glucose in Blood of Normal Individuals. C. Lundsgaard and S. A. Holbøll, Copenhagen, Denmark.—p. 323.
*Id. IV. Investigations Into Nature of Glucose in Blood of Patients with Diabetes Mellitus and Patients with Benign Glycosuria. C. Lundsgaard and S. A. Holbøll, Copenhagen, Denmark.—p. 343.
Id. V. Investigations Into Form of Glucose in Different Body Fluids. C. Lundsgaard and S. A. Holbøll, Copenhagen, Denmark.—p. 363.
Electrodialysis of Agar. Method for Preparation of Free Agar-Acid. W. F. Hoffman and R. A. Gortner, Minneapolis.—p. 371.
Studies of Acidosis. XXI. Colorimetric Determination of pH of Urine. A. B. Hastings, J. Sendroy, Jr., and W. Robson, New York. —p. 381.
*More Specific Reagent for Determination of Sugar in Urine. J. B. Sumner, Ithaca, N. Y.—p. 393.
*Carbohydrate Metabolism of Tumors. II. Changes in Sugar, Lactic Acid and Carbon Dioxid Combining Power of Blood Passing Through Tumor. C. F. Cori and G. T. Cori, Buffalo.—p. 397.
Blood as Physicochemical System. III. Deductions Concerning Capillary Exchange. L. J. Henderson and C. D. Murray, Névache, France.—p. 407.
Oxygen Exchange, Blood, and Circulation: Coordinated Treatment of Factors Involved in Oxygen Supply on Basis of Diffusion Theory. C. D. Murray and W. O. P. Morgan, Cambridge, England.—p. 419.
Effect of Variation in Ionic Strength on Apparent First and Second Dissociation Constants of Carbonic Acid. A. B. Hastings and J. Sendroy, Jr., New York.—p. 445.
Vitamin B in Excreta of Rats on Diet Low in this Factor. W. D. Salmon, Auburn, Ala.—p. 457.
Synthetic Nucleosids. I. Theophylline Pentosids. P. A. Levene and H. Sobotka, New York.—p. 463.
Id. Substituted Uracil Xylosids. P. L. Levene and H. Sobotka, New York.—p. 469.
Chemical Findings in Blood of Normal Dog. R. L. Haden and T. G. Orr, Kansas City, Kan.—p. 479.
Concentration of Vitamin B. II. P. A. Levene and B. J. C. Van der Hoeven, New York.—p. 483.
Strophanthin. VIII. Carbonyl Group of Strophanthidin. W. A. Jacobs and A. M. Collins, New York.—p. 491.
Substitution by Halogen of Hydroxyl in Secondary Alcohols. P. A. Levene and L. A. Mikeska, New York.—p. 507.
Oxidation of Secondary Mercaptans Into Corresponding Sulphonic Acids. P. A. Levene and L. A. Mikeska, New York.—p. 515.
Dissociation Constants of Plant Nucleotids and Nucleosids and Their Relation to Nucleic Acid Structure. P. A. Levene and H. S. Simms, New York.—p. 519.
Numerical Values of Optical Rotation of Methylated Gluconic Acids and Their Salts. P. A. Levene and G. M. Meyer, New York.— p. 535.
Bromolecithins. Fractionation of Brominated Soy Bean Lecithins. P. A. Levene and I. P. Rolf, New York.—p. 545.
Thio-Sugar from Yeast. P. A. Levene and H. Sobotka, New York.— p. 551.

Nature of Blood Glucose in Diabetes and Glycosuria.—Out of eleven examinations made by Lundsgaard and Holbøll on ten patients with severe or moderately severe diabetes mellitus, new glucose could not be detected in the blood in nine. This substance, however, was found in two patients at the conclusion of the treatment. In five of the patients in whose blood new glucose could not be detected, it was present in the blood two hours after the administration of insulin. In two patients with benign glycosuria, new glucose was found in the blood. In all the patients in whom new glucose was detected in the blood, a removal of glucose from the blood stream could at the same time be demonstrated during its passage through the capillaries, while this was not the case in diabetics where new glucose could not be detected in the blood. The authors, therefore, assume that new glucose is an essential link in normal carbohydrate metabolism and probably first, and that insulin exerts its action in the organism in conjunction with a substance always or usually present in the muscles, by transforming α, β-glucose into new glucose which can then be further broken down in the organism.

Determination of Sugar in Urine.—Sumner now prepares his dinitrosalicylic reagent by adding to it both phenol and sodium bisulphite and asserts that it is exceedingly delicate in its action.

Carbohydrate Metabolism of Tumors.—On comparing the sugar and lactic acid contents and the carbon dioxid combining power of the plasma of blood drawn from the right and left wing vein of normal chickens, identical values were obtained by the Coris. If a tumor was growing on one wing, the blood that had passed through the tumor contained, as an average, 23 mg. less of sugar and 16.2 mg. more of lactic acid than the blood that had passed through the tissue of the normal wing. The plasma obtained from the blood of the tumor side showed on saturation with alveolar air 3.7 volumes per cent. less of carbon dioxid than that of the normal side. The plasma of blood that had been collected under oil contained as an average only 0.7 volume per cent. less of carbon dioxid when compared with that of the normal side.

Journal of Experimental Medicine, Baltimore

42: 431-592 (Oct. 1) 1925

*Effect of Operative Interference with Cervical Sympathetic Nervous System on Growth and Malignancy of Transplantable Neoplasm of Rabbit. L. Pearce and C. M. Van Allen, New York.—p. 431.
Comparative Studies of Action on Pneumococcus of Bile Acids and Unsaturated Fatty Acids, Found in Bile in Form of Soaps. A. Kozlowski, Albany, N. Y.—p. 453.
*Local Immunization of Rabbits to Cutaneous Infecton with Staphylococcus Aureus. R. B. Mallory and A. Marble, Boston.—p. 465.
Biology of Bacterium Lepisepticum. II. Structure of Iron Compounds Which Influence Growth of Certain Bacteria of Hemophilic, Anaerobic and Hemorrhagic Septicemia Groups. L. T. Webster and O. Baudisch, New York.—p. 473.
*Bacteriophage of D'Herelle. III. Some Factors Determining Number and Size of Plaques of Bacterial Lysis on Agar. J. J. Bronfenbrenner and C. Korb, New York.—p. 483.
*Experimental Rickets in Rabbits. H. Goldblatt and A. R. Moritz, Cleveland.—p. 499.
Regeneration of Bacteriophage. I. Influence of Partial Anaerobiosis on Regeneration of Highly Diluted Lytic Principle. G. Shwartzman, New York.—p. 507.
Production of Persistent Alopecia in Rabbits by Roentgen Rays of Various Degrees of Hardness. H. Clark and E. Sturm, New York.—p. 517.
Growth and Persistence of Filterable Viruses in Transplantable Rabbit Neoplasm. T. M. Rivers and L. Pearce, New York.—p. 523.
*Experimental Studies with Spiral Organism Found in Wild Rat and Identical with Organism Causing Rat-Bite Fever. H. Mooser, Mexico City, Mex.—p. 539.
Bacteriophage Tests on Meconium of Aborted Fetuses. E. S. Sanderson, Princeton, N. J.—p. 561.
Relationship of Chemical Constituents of Blood and Cerebrospinal Fluid. L. S. Kubie and G. M. Shults, Baltimore.—p. 565.

Effect of Operations on Cervical Sympathetic.—The effect of the removal of the complete cervical sympathetic nervous system of both superior and of both inferior cervical ganglions and a small portion of the cervical sympathetic nerve in the rabbit was studied by Pearce and Van Allen in relation to the character of a malignant disease induced by a transplantable neoplasm. It was found that the general character of the disease which developed in the groups of animals in which operation was done was more severe than that of a similar sized control group. Comparisons of the mortality rate in the several groups, of the animal incidence

of metastases, the number of metastatic foci, and the distribution of these secondary growths, all showed this to be the case. There appeared, furthermore, to be differences in malignancy among the groups themselves in which operation was performed. The more severe disease occurred in the group in which a portion of the sympathetic nerve only was removed (sympathotomy); that in the complete sympathectomy and superior sympathectomy groups was slightly less malignant; and that in the inferior group was much less so. These results have been interpreted as due to a less effective animal resistance, the mechanism of which has been interfered with in some way by the interference with the sympathetic nerves. The reasons for the difference in malignancy exhibited by the several groups in which operation was done are undetermined. A tentative explanation is suggested on the basis of coordinating favorable or deleterious functions subserved by the cervical sympathetic nervous system.

Local Immunization to Cutaneous Infection.—Bacterial filtrates were prepared by Mallory and Marble by the methods described by Besredka, but these never developed any specific growth-inhibiting factors. Such filtrates produced a strictly local immunity of the areas of the skin infiltrated, but such protection was never greater than that produced with the broth from which they were prepared. This immunity was manifest within eight hours and persisted at least fifteen days. Transcutaneous treatment by moist dressings soaked in either filtrate or broth were entirely ineffective. Sites of healed cutaneous lesions show a strictly local and nonspecific immunity for a period of from five to six weeks. Repeated intracutaneous infection with virulent staphylococci failed to produce a general cutaneous immunity.

Distribution of Lytic Principle.—The experiments reported on by Bronfenbrenner and Korb confirm the fact that lytic principle is distributed in active solution in a state of indivisible units. This permits its quantitative evalution by serial dilution, as well as by plating on agar.

Experimental Rickets.—Rickets has been produced experimentally in rabbits by Goldblatt and Moritz by the administration of diets deficient in the antirachitic organic factor and phosphorus but with a high calcium content. Cod liver oil added to these rickets producing diets prevented the development of rickets in rabbits.

Spiral Organisms of Rats and Rat-Bite Fever.—The spiral organism isolated from a wild rat has proved identical with that from a human case of rat-bite fever in Mexico City studied by Mooser. Rabbits can easily be infected with these organisms. The subcutaneous inoculation of them is followed after from three to five days by a local edema, induration and inflammation—primary lesion. About eight days after the appearance of the primary lesion, edematous swellings and inflammation appear on the head and genitals—secondary lesions. The organism can be transmitted from rabbit to rabbit by coitus. Protective antibodies are to be found in the blood of infected rabbits at a time when the local lesions are still active. The peculiar character of certain of the lesions is probably due to the escape of the antibodies from the blood stream. The organism belongs to the genus Treponema.

Journal of Radiology, Omaha

6: 347-387 (Sept.) 1925

International Association of University Lectures of Radiology. M. Haudek, G. Holzknecht, R. Kienbock and E. Weber, Vienna.—p. 347.
Diseases Originating at Gum Margin. W. L. Shearer and A. F. Tyler, Omaha.—p. 352.
Modifications Which Have Been Wrought on Treatment of Pulmonary Tuberculosis During Last Twenty-Five Years. J. D. Gibson, Denver.—p. 354.
Ethical Position of Physiotherapist. M. J. Breuer, Lincoln.—p. 357.
Diathermy in Gynecology; Vaginal Electrode. W. B. Chapman, Carthage, Mo.—p. 361.
Thrombo-Angiitis Obliterans of Hand. C. L. Hustead, Falls City, Neb.—p. 367.

Kansas Medical Society Journal, Topeka

25: 283-318 (Sept.) 1925

Eugenics. B. F. Morgan, Clay Center.—p. 283.
Vomiting in Pregnancy. M. W. Hall, Wichita.—p. 288.
Diabetes Insipidus. H. Marchbanks, Pittsburgh.—p. 291.

New York State Journal of Medicine, New York

25: 921-952 (Oct. 1) 1925

*Prevention in Pediatric Practice. J. H. M. Knox, Jr., Baltimore.—p. 921.
*Mental Hygiene of Child; Relation to Medicine. D. A. Thom, Boston,—p. 924.
Mental Hygiene of Child; Relation to Development of Character. I. S. Wile, New York.—p. 926.
Surgical Aspect of Nasal Ganglion. S. L. Ruskin, New York.—p. 929.
Newspaper as Aid in Public Health Work. L. F. Schiff, Plattsburg.—p. 933.

Prevention in Pediatrics.—Whether the health of school children is a primary responsibility of the school commissioners or the health department, whether these children shall be called school children or children of school age, is still debatable, but in any case, says Knox, all matters pertaining to the health of children in schools should be directed by a physician interested and skilled in this field of work. He should pass on the construction of the building, the air space, ventilation, lighting, washroom and toilet facilities, the type of desks and seats, blackboards and lockers, the school lunches and other arrangements that have to do with the hygiene of the school life. Competent medical authority should supervise the instruction in health given to all grades and advise as to school hours, rest periods and the recreation of the children. In cooperation with the teacher, the nurse or physician should arrange for the daily inspection and occasional examination of the children and direct the precautions to be taken to prevent the spread of communicable disease, and with the family physician should advise as to the care of the malnourished or otherwise physically handicapped child.

Mental Hygiene of Child.—Thom believes that the mental health of the child just as the physical health is to a very large degree in the hands of the general practitioner, and not the specialist, and in assuming the responsibility he should utilize as one of his important instruments the knowledge which has gradually been collected under the subject of mental hygiene.

25: 953-982 (Oct. 15) 1925

*Therapeutic Value of Oxygen in Pneumonia. C. A. L. Binger, New York.—p. 953.
Importance and Technic of Palpation of Female Pelvic Ureters. D. W. Tovey, New York.—p. 958.
Diagnostic Curettage in So-Called Idiopathic Uterine Bleeding. E. Novak, Baltimore.—p. 961.
Idiopathic Uterine Bleeding from Clinical Standpoint. W. P. Healy, New York.—p. 964.
Treatment of Fractures of Neck of Femur. W. C. White, New York.—p. 966.

Value of Oxygen in Pneumonia.—While Binger does not regard oxygen therapy as being specific in these cases, he believes that it removes one of the obstacles which a sick patient must surmount on his road to recovery, and when it is properly given one may look usually for improvement in cyanosis, improvement in the patient's psyche, slight reduction in his pulse rate, and at times in his rate of respirations. This may be just sufficient to tide the patient over his critical days until he has established a sufficient immunity to handle his infection; often, to be sure, it may simply prolong his life by a few days when the bacterial infection is such as to overwhelm him.

Ohio State Medical Journal, Columbus

21: 713-776 (Oct. 1) 1925

Cancer of Stomach. C. A. Hyer, Columbus.—p. 717.
Cavernous Angioma of Eyelid and Lymphangioma of Bulbar Conjunctiva. V. Ray, Cincinnati.—p. 720.
Neurosyphilis in Cleveland State Hospital During 1919-1923. G. H. Williams, Cleveland.—p. 722.
Physiotherapy in Relation to Surgical Conditions. L. M. Otis, Celina.—p. 725.
Care and Feeding of New-Born Baby. T. J. Glenn, Cincinnati.—p. 728.
Congenital Dislocation of Hip. G. N. Morrill, Cleveland.—p. 730.
Posture. J. J. Sutter, Lima.—p. 734.

Philippine Journal of Science, Manila

28: 1-172 (Sept.) 1925

Intestinal Nodules in Chickens Due to Heterakid Larvae (Heterakis Beramporia Lane). B. Schwartz.—p. 1.
Metazoan Parasites of Philippine Domesticated Animals. M. A. Tubangui.—p. 11.
Psyllidae. D. L. Crawford.—p. 39.

New Species of Sambus from Manila (Coleoptera; Buprestidae). W. S. Fisher.—p. 45.
Ants of Philippine Islands. W. M. Wheeler and J. W. Chapman.—p. 47.
Japanese Lepidoptera and Their Larvae. VIII. A. E. Wileman.—p. 75.
Tenebrionides (Coleoptera) of Indo-Malay. VIII. Anisocara, Spiloscapha, Menimus, Labidocera, und Pentaphyllus. H. Gebien.—p. 101.
Cricket-Locusts (Gryllacridae), Chiefly from Philippine Islands. H. H. Karny.—p. 131.

Southwestern Medicine, Phoenix, Ariz.

9: 377-414 (Oct. 3) 1925

Treatment of Mental Illness. K. A. Menninger, Topeka, Kan.—p. 377.
Mental Hygiene—Dementia Praecox. C. W. Thompson, Pueblo, Colo.—p. 386.
Operative and Postoperative Complications of Subtotal Thyroidectomy. A. P. Heineck, Chicago.—p. 390.
Diagnosis and Treatment of Tuberculosis of Middle Ear. H. Yandell, Phoenix, Ariz.—p. 394.
Syphilitic Interstitial Keratitis. R. A. Hernandez, Tucson, Ariz.—p. 396.

Surgery, Gynecology and Obstetrics, Chicago

41: 399-556 (Oct.) 1925

*Teratomata, Ovarian and Retroperitoneal. O. A. Gordon, Brooklyn.—p. 399.
Calcareous Deposits of So-Called Calcifying Subacromial Bursitis. J. B. Carnett, Philadelphia.—p. 404.
*Chronic Pancreatitis. J. W. Hinton, New York.—p. 422.
*Manometric Study of Cerebrospinal Fluid in Suspected Spinal Cord Tumors. B. Stookey, H. R. Merwarth and A. M. Frantz, New York.—p. 429.
Radiation Therapy in Deep Seated Malignant Disease. G. E. Pfahler, Philadelphia.—p. 443.
Osteo-arthritic Protrusion of Acetabulum. P. Lewin, Chicago.—p. 449.
*Deltoid Paralysis Following Shoulder Injuries. J. F. Smith and H. H. Christensen, Wausau, Wis.—p. 451.
*Diabetic and Nondiabetic Glycosuria in Surgical Patient. W. C. Menninger, Topeka, Kan.—p. 454.
Benign Tumors of Stomach. E. L. Eliason and V. W. M. Wright, Philadelphia.—p. 461.
Consideration of Cervix Uteri from Standpoint of Its Sphincter Properties. E. M. Blair, Vancouver, B. C.—p. 473.
Sarcoma of Uterus: Case. J. C. Bunten, Augusta, Kan.—p. 477.
Osteitis Fibrosa Cystica. J. N. Sisk, Madison, Wis.—p. 481.
Systemic Blastomycosis. C. C. Garr, Lexington, Ky.—p. 490.
Combined Satchel Handle or Tubed Pedicle and Large Delayed Whole Skin Pedicle Flaps in Case of Plastic Surgery of Face, Neck and Chest. B. F. Alden, San Francisco.—p. 493.
Three-Stage Operation for Radical Resection of Colon for Cancer. J. G. Montgomery, Kansas City, Mo.—p. 497.
Cesarean Section After Test of Labor. H. M. Armitage, Chester, Pa.—p. 502.
*Round Ligament Operation for Surgical Cure of Uterine Displacement in Selected Cases. G. L. Carrington, Durham, N. C.—p. 507.
Oblique Gastroduodenostomy in Treatment of Ulcers of Duodenum and Stomach, and Cancer of Pylorus. A. L. Soresi, New York.—p. 509.
Arthroplasty Splint. P. M. Jepson, Rochester, Minn.—p. 512.
Blood Transfusion to Date. E. A. Herr, Waterbury, Conn.—p. 513.

Teratomas, Ovarian and Retroperitoneal.—Gordon holds that the term dermoid, as applied to ovarian neoplasms, is inaccurate. So-called ovarian dermoids should be referred to as cystic ovarian teratomas. The histogenesis of ovarian teratomas is highly speculative. There are two seriously considered theories as to their origin, one the so-called blastomere theory of Marchand and Bonnet, and the other the germ cell theory of Wilms. Cystic teratomas or dermoids are one of the commonest ovarian neoplasms. In a series of 125 ovarian tumors at Bellevue Hospital, they comprise 8 per cent. of the cases. Bilateral cystic teratomas are comparatively common, occurring in from 2 to 14 per cent. of the cases. Malignant changes in cystic teratomas are rare, the most frequent type being squamous cell carcinoma. The ratio of development of carcinoma is usually given as from 3 to 5 per cent. Ovarian resection is justifiable in cases of bilateral cystic teratomas in young women in whom subsequent pregnancies are desired. Solid teratomas are among the rarest of ovarian neoplasms. There is no case in the records of Bellevue Hospital in which the gynecologic admissions average 1,800 cases a year. So-called struma ovarii may be benign or malignant. Retroperitoneal teratomas are unusual tumors. There is no case of solid retroperitoneal teratoma recorded in the literature. Gordon reports a case of cystic retroperitoneal teratoma weighing 11 kg.

Chronic Pancreatitis.—Hinton believes that some of the recurrent attacks of upper abdominal pain following cholecystectomy seem to be due to acute exacerbation of a chronic pancreatitis. This diagnosis should be arrived at by a very careful process of elimination. Some of these cases spontaneously cure themselves if given the opportunity. Surgery employed in these cases does not seem to cure the condition or prevent subsequent attacks.

Cerebrospinal Fluid in Spinal Cord Tumors.—Stookey and his associates insist that in suspected spinal cord neoplasms manometric readings of the cerebrospinal fluid through lumbar puncture should be a routine procedure. Examination is incomplete without a manometric study. Manometric studies of the cerebrospinal fluid through lumbar puncture (without cistern puncture) may indicate complete subarachnoid block, incomplete subarachnoid block, or the presence of a free, unobstructed subarachnoid space. In all patients operated on, in whom the manometric tests indicate complete subarachnoid block, some form of spinal cord neoplasm was found. In all patients in whom the manometric tests indicated incomplete subarachnoid block, either a spinal cord neoplasm or some other form of subarachnoid block was found. Negative manometric readings were found in two patients having an early symmetrical enlargement of the cord, presumably an intramedullary tumor, which, however, did not interfere with the free circulation of the cerebrospinal fluid. In all others exposed the manometric findings were substantiated at operation. Combined lumbar and cistern puncture is indicated when manometric studies through the lumbar puncture alone do not permit of definite conclusions being drawn. In the authors' experience combined lumbar and cistern puncture was indicated in only three cases out of fifty suspected spinal cord tumors.

Deltoid Paralysis Following Shoulder Injuries.—Smith and Christensen report two cases of nonpenetrating injury to the shoulder, resulting in paralysis of the deltoid, both showing the typical area of anesthesia and both showing no tendency of the humerus to fall away from the glenoid. One case was uncomplicated by any other nerve injury, and in the other case there was a concomitant injury to the branches of the radial supplying the triceps muscle but with no demonstrable lesions of the first three primary divisions of the plexus. In both cases, a definite lesion (solution of continuity) of the circumflex nerve was demonstrated at operation. In both cases, there was no roentgen-ray evidence of bone injury. The exact mechanism of injury was also obscure but in at least one case was probably due to a subglenoid dislocation of the upper end of the humerus. These two cases apparently demonstrate that even common injuries of the shoulder without crushing, penetration, or laceration may result in definite solution of continuity of the circumflex nerve with resulting complete and permanent paralysis of the deltoid muscle.

Glycosuria in Surgical Patient.—In a series of forty-seven cases treated before insulin, there were twenty deaths (42.5 per cent.), and four additional patients who left the hospital in a critical condition refusing treatment. In a series of twenty-two cases treated with insulin, there was one death (4.5 per cent.). Urinalysis is performed by Menninger every three hours as long as the patient shows glycosuria, with insulin administration based on the findings. Fluid intake is encouraged preoperatively and forced to at least 2,000 daily, postoperatively. The diet given allows 30 calories per kilogram of body weight, with 1 gm. of protein per kilogram of body weight, and the remainder in carbohydrate and fat in the ratio of 1 to 3. Blood chemistry is very desirable in cases of coma, in partial urinary retention, and after glycosuria has disappeared. In the great majority of cases, it is not essential while the patient shows glycosuria and very valuable time is lost, with much increased danger to the life of the patient, in waiting several hours for a blood sugar determination. Alkaline therapy is not used at present. Traumatic glycosuria may be effectively treated, when necessary, with insulin.

Operation for Malposition of Uterus.—Carrington divides the round ligament; the proximal half of the ligament is sutured to the rectus sheath, and the distal half is sutured to the anterior surface of the uterus, thus providing two new supports for this organ.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Annals of Tropical Medicine and Parasitology, Liverpool

19: 265-379 (Sept. 30) 1925

Proteocephalus Marenzelleri, P. Naiae and P. Viperis. W. N. F. Woodland.—p. 265.
Human Trypanosomiasis in Luagwa Valley, Northern Rhodesia. A. Kinghorn.—p. 281.
Experimental Study on Development of Dwarf Tapeworm. Y. Saheki. —p. 305.
Sporozoon of Phlebotomus Papatasii. S. Adler and O. Theodor.—p. 309.
Genus Tetracampos Wedl, 1861. T. Southwell.—p. 315.
New Medium for Differentation of B. Coli in Water Analysis. J. L. Pawan.—p. 319.
*Malaria Infection as It Occurs in Late Pregnancy. D. B. Blacklock and R. M. Gordon.—p. 327.
Coordination of Effort in Tsetse-Fly Investigations. W. Yorke.—p. 373.

Malaria Infection in Late Pregnancy.—Blacklock and Gordon state that malaria infection of the placenta occurs in about 36 per cent. of native women in Sierra Leone. These women are practically negligible as a source of danger to the community, so far as gamete production and consequent anopheline infection are concerned. Pathologic effects on the mother may be lacking entirely. The children may in some cases be born and survive, and may appear free from any effects. On the other hand this series contains in other cases proof of a very complete association between maternal infection in the placenta and death of the child in utero, or within a seven day observation period after birth. Examination of a large number of infected placentas showed that severe destruction of the erythrocytes may occur in the umbilical cord in spite of the absence of congenital malaria.

Australian Journal of Experimental Biology and Medical Science, Adelaide

2: 135-166 (Sept. 16) 1925

*Histologic Observations on Pancreatic Secretion. E. S. Horning.—p. 135.
Source of Protein in Albuminuria of Experimental Nephritis. C. H. Kellaway, G. F. S. Davies and F. E. Williams.—p. 139.
Trial and Error and Intelligence in Behavior of Certain Arthropods. W. E. Agar.—p. 151.
*Nerve Net of Plain Muscle; Its Relation to Automatic Rhythmic Movements. O. W. Tiegs.—p. 157.

Pancreatic Secretion.—According to Horning's observations, the zymogen grains of the pancreatic cells of the guinea-pig are secreted as grains (globules) into the acini, where they are rapidly dissolved. They arise in the cells mainly from the filamentous mitochondria. This suggests the enzymatic nature of the latter. They also seem to contain a lipoidal substance. The zymogen grains may be secreted, not only into the acinar ducts, but also into the pancreatic blood vessels.

Nerve Net of Plain Muscle.—Tiegs has found that a nerve net is always developed in intimate association with plain muscle tissue, never in connection with striated muscle tissue. Nerve fibers arise from the nerve net, and terminate directly on the muscle fibers. Such a nerve net is capable of serving as a basis for simple reflexes, without the intervention of a central nervous system. Automatic rhythmic movements of isolated, deganglionated plain muscle strips always originate in the nerve net, and never directely in the muscle coat. Coordinated action of plain muscle tissue is always neurogenic, never myogenic.

British Medical Journal, London

2: 589-632 (Oct. 3) 1925

Rheumatoid Arthritis; Causation and Treatment. I. H. Tollestrup.—p. 589.
Id. II. W. R. Ackland.—p. 594.
Id. III. R. Waterhouse.—p. 595.
Id. IV. R. S. Osgood.—p. 596.
Id. V. R. Jones.—p. 597.
Id. VI. J. M. H. Munro.—p. 598.
Id. VII. A. G. T. Fisher.—p. 599.
Id. VIII. W. Willcox.—p. 600.
Id. IX. A. Cawadias.—p. 602.
*Surgical Treatment of Mitral Stenosis. H. S. Souttar.—p. 603
*Syphilis and Aneurysm: Age and Sex Incidence and Cause of Death in Aortic Aneurysm. E. M. Brockbank.—p. 606.
Two Forms of Dermatitis Due to Use of Methylated Spirit Externally. P. B. Mumford.—p. 607.
Common Mistakes in Teaching of Physical Training. H. B. Hill.—p. 608.
Medical, Surgical, Obstetrical: Direct Fracture of Clavicle with Symptoms Simulating Cervical Rib.—p. 608.
Congenital Duodenal Atresia. C. D. Maitland.—p. 609.
Elephantiasis of the Breast. M. Jackson.—p. 609.

Surgical Treatment of Mitral Stenosis.—Souttar describes a method of approach to the mitral valve for the purpose of cutting it and cites one case in which it was tried successfully, except that no cutting of the valve was done. As the stenosis was of moderate degree, and was accompanied by so little thickening of the valves, it was decided not to carry out the valve section which had been arranged for, but to limit intervention to such dilation as could be carried out by the finger. The patient made an uninterrupted recovery, the freedom from pain or any disturbance which might have been expected to result for the operation being remarkable. Her general condition appeared to be greatly improved, but the physical signs showed little or no change. At the end of the three months she declared that she felt perfectly well, although she still became somewhat breathless on exertion. Souttar asserts that this is the first occasion on which an attempt has been made to reach the mitral valve by this route in the human being, or to subject the interior of the heart to digital examination.

Syphilis and Aortic Aneurysm.—The age and sex incidence and cause of death in aortic aneurysm are discussed by Brockbank as the result of his analysis of fifty-six cases. Of these fifty-six cases, forty-seven were men and nine were women. In fifty-two cases, or 92.85 per cent. (forty-five men and seven women), and in forty-three of the forty-five men (95.5 per cent.), there was a definite history of previous syphilis or a positive Wassermann test. The Wassermann blood reaction was positive in forty out of forty-four cases tested. The ages of the fifty-two patients with positive test or history of syphilis varied in the men from 29 to 68, and in the women from 37 to 70. Of 200 cases of aortic aneurysm found post mortem, the average age at death was 43.87 years. In 42.5 per cent. of all the cases death occurred before 40 years of age and in 75.5 per cent. before 50. Death occurred in these cases from exhaustion and heart failure and rupture of the aneurysm and with virtually equal frequency.

Calcutta Medical Journal

20: 1-48 (July) 1925

Basal Metabolism. H. N. Mukherjee.—p. 1.
Report on 200 Cases of Kala-Azar. B. Mazumdar.—p. 10.
Treatment of Gonorrhea in Male. S. Chatterji.—p. 14.
Tuberculous Cervical Glands. S. C. Sen Gupta.—p. 17.
Case of Spontaneous Inversion of Uterus. R. N. Kundu.—p. 20.
Case of Intestinal Stasis and Anuria. S. M. Sarkar.—p. 22.
Case of Threatened Abortion. B. B. Bhattacharyya.—p. 24.

China Medical Journal, Shanghai

39: 767-854 (Sept.) 1925

*Acute Intestinal Obstruction. A. S. Taylor.—p. 767.
Syphilis: Importance to Physicians in China. G. W. Leavell.—p. 776.
*Sodium Thiosulphate in Treatment of Mercurial Stomatitis. G. A. M. Hall.—p. 785.
Cesarean Section. E. D. Smith.—p. 788.
Case of Triradiate Tenia Solium from North China. E. C. Faust.—p. 800.
Reels for Ligature Silk. J. P. Webster.—p. 804.
Gastro-Enterostomy. E. C. Wilbur.—p. 807.
Cases of Atriplicism. S. H. Martin.—p. 808.

Acute Intestinal Obstruction in China.—Thirty-three cases of acute intestinal obstruction are reported by Taylor. Six patients died following operation. In four of these patients gangrene of the bowel, with general peritonitis, was present before the operation. Strangulated hernia was the cause of the obstruction in thirteen cases. Carcinoma was responsible for the obstruction in three cases. Tuberculosis was the cause in three instances. Bolbulus and intussusception were each responsible for one case. Adhesions following gastro-enterostomy caused obstruction to the duodenum and afferent loop of the jejunum in five patients. Adhesions following other operations caused obstruction in three cases.

Sodium Thiosulphate in Mercurial Stomatitis.—Hall reports striking results from the use of sodium thiosulphate in four cases of severe mercurial stomatitis, and one case of tissue reaction due to the leaking of neo-arsphenamin from a vein. All the patients had an extreme degree of stomatitis. In none of the cases was there any gastro-intestinal disturbance, or any involvement of the kidneys. In two cases 0.45 gm. of chemically pure sodium thiosulphate, in 10 c.c. of water, was injected as the first dose, and no untoward effect was noted. A third patient, who was suffering considerably from syphilitic bone pain, and in whom it was desired to clear the condition rapidly in order that arsphenamin treatment might be started, was given one dose only of 0.6 gm. This was followed in about half an hour by a slight rigor, without, however, any further ill effects. The next day the mouth was so much improved that food could be taken with relish. Local treatment in all cases consisted of frequent washing out of the mouth with Dobell's solution. The patient with the arsphenamin in the subcutaneous tissue complained of great pain of a burning character, coming on very soon after injection, and after a few hours had considerable swelling and redness of the whole of the antecubital area. Ten patients received an injection of 10 c.c. of a solution containing 0.6 gm. of sodium thiosulphate.

Indian Medical Record, Calcutta

45: 273-304 (Sept.) 1925

Tuberculosis in Bengal. G. N. Mukherji.—p. 273.
Nature's Covers and Their Significance. M. S. Nawaz.—p. 276.
Preservation of Eyesight. K. B. T. Hussain.—p. 279.
Nastin Treatment of Leprosy. R. N. Chatterjee.—p. 286.

Japan Medical World, Tokyo

5: 201-235 (Aug. 15) 1925

*Treatment of Elephantiasis. H. Kimura.—p. 201.
Morphology of Necks of Japanese; Shape of Chest. U. Hasehawa.—p. 211.

Treatment of Elephantiasis.—For the purpose of establishing lymphatic drainage in the treatment of elephantiasis, Kimura brings normal and affected skin into close contact by planting a pedunculated normal skin flap with its subcutaneous fatty tissues into the affected site. This method is more effective in the penis or scrotum than in the lower extremity. In elephantiasis of the lower extremity, this method, together with Kondoleon's method, and the removal of superabundant tissues, has given better results than any method now in use.

Kenya Medical Journal, Nairobi, East Africa

2: 155-184 (Sept.) 1925

Plague in South Africa. W. H. Kauntze.—p. 163.
*Eradication of Helminthiasis from Egyptian Army. B. H. H. Spence.—p. 183.

Eradication of Helminthiasis in Egypt.—Spence says that in the Egyptian army recruits infested with helminthia were given 5 c.c. of carbon tetrachlorid, by mouth, before the morning meal, i. e., on a naturally empty stomach. Two hours later, 25 gm. of magnesium sulphate, in 50 c.c. of water, was given as a purge. Ninety-five per cent. of those examined three months after treatment were found to be cured.

Lancet, London

2: 735-790 (Oct. 10) 1925

Ununited Fractures. E. W. W. Groves.—p. 735.
Avenues in Medicine. C. Sherrington.—p. 741.
Tradition in Medicine. C. E. Lakin.—p. 744.
The Medical Career. H. F. Waterhouse.—p. 746.
Stable Nervous Control in Relation to Flying Efficiency. M. Flack.—p. 748.
*Fecal Enterolith of Small Intestine. R. J. Morris.—p. 751.
*Ischemia Cordis Intermittens. L. Bischoff.—p. 753.

Fecal Enterolith of Small Intestine.—In Morris' case the conclusion arrived at was that the symptoms of intestinal obstruction were due to malignant disease. At the operation a hard mass was found lying free in the lower portion of the ileum and was successfully removed. It was an enterolith weighing 33.4 gm., 5.5 cm. long, and 3.8 cm. in diameter. The enterolith was principally fecal in nature, and it did not originate as a gallstone, a bile acid concretion or a blood clot. The appearance did not suggest that it was an "oatmeal stone," such as has been described by Hammarsten.

Ischemia Cordis Intermittens.—Bischoff describes a group of anginoid phenomena, which he designates as ischemia cordis intermittens. The condition affects patients of about from 30 to 70 years, mostly males, who often, after more or less brisk walking (generally in the open) or climbing, or, in fact, soon after any sort of exercise, feel a disagreeable pain behind the sternum, which passes into a feeling of spasmodic contraction and oppressive sensations of anxiety, culminating in such a feeling of annihilation that the patients are obliged to stop; if they must perforce move on, they can only do so under extreme necessity. It may lead to the complete loss of consciousness. There is no dyspnea with this affection. A rest of a few seconds, or at most of minutes, is sufficient to enable the patient to continue his walk in perfect comfort. Soon, however, after the resumption of exercise the pain returns, and rest becomes more necessary. The history of all patients, with slight variations, reveals the same almost stereotyped phenomena. Bischoff cites seven cases.

South African Medical Record, Cape Town

23: 351-372 (Aug 22) 1925

Pyelography Applied to Renal Disease. E. Barnard Fuller.—p. 352.
Normal Infant Feeding. G. K. Cross.—p. 356.
Discolored Teeth and Their Treatment. G. Newton.—p. 361.
Triumph of Sampson Handley. A. L. McGregor.—p. 363.

Journal of Tropical Medicine and Hygiene, London

18: 345-360 (Oct. 1) 1925

*Cultivation of Certain Amebae and Flagellates of Man, Using Technic of Boeck and Drbohlav. J. G. Thomson and A. Robertson.—p. 345.
Common Endemic Fevers of Ceylon. E. C. Spaar.—p. 349.

Cultivation of Amebas and Flagellates.—The work of Boeck and Drbohlav on the cultivation of *Endameba histolytica* and *E. coli* has been confirmed by Thomson and Robertson. *Diendameba fragilis* and *Endolimax nana* and *Iodameba butschlii* have also been cultivated, but experiments to inoculate kittens with the cultures were negative. *Trichomonas hominis, Chilomastix mesnili* and *Tricercomonas intestinalis* grow readily on the medium of Boeck and Drbohlav to which has been added a small quantity of fresh sterile human feces. The movements and behavior of the organisms in culture have been studied.

Medical Journal of Australia, Sydney

2: 359-386 (Sept. 19) 1925

Value of Blood Pressure Readings. J. F. Stewart.—p. 359.
James Cook and Australian Medical Harbingers. N. J. Dunlop.—p. 362.
Case of Pregnancy at Full Term in Rudimentary Horn of Uterus. C. E. D'Arcy.—p. 373.

Medical Journal of South Africa, Johannesburg

21: 1-30 (Aug.) 1925

Cerebrospinal Meningitis. C. Porter.—p. 8.
Work of Laboratory in Relation to Practice of Medicine. S. Lister.—p. 12.
Fetal Death. R. L. Impley.—p. 15.

Tohoku Journal of Experimental Medicine, Sendai, Japan

6: 191-394 (Sept. 18) 1925

Epinephrin Hyperglycemia and Glycosuria. III. Reducing Substances. T. Ohara.—p. 191.
Id. IV. Antagonism Between Pancreas Hormone and Epinephrin. T. Ohara.—p. 213.
Agglutination Changes in Pneumococcus in Animal Body. T. Takami.—p. 248.
Pneumococcus Grouping by Agglutination. T. Takami.—p. 260.
Serologic Blood Studies on Japanese and Ainus. Y. Ninomiya.—p. 266.
Local Irritability of Digitalis Infusions. M. Nakamura.—p. 278.
Relation of Thyroid Function to Oxygen Consumption of Blood. E. Tsukamoto.—p. 286.
Blood Sugar Level and Epinephrin Content of Suprarenals in Diphtheritic Intoxication. S. Mikami.—p. 297.
Relation of Basal Metabolism and Minute Volume to Internal Secretions. I. T. Odaira.—p. 325.
Pharmacologic Action of Amines on Organs Containing Involuntary Muscles. M. Nakamura.—p. 367.
Antigen in Animal Body. K. Sakurabayashi.—p. 390.

Bruxelles-Médical, Brussels

5: 1372-1396 (Sept. 13) 1925

Rôle of Humoral Fluids in Physiology and Pathology. J. Demoor. —p. 1372.
The Targowla Reaction. R. Bernard and G. Ruelle.—p. 1379. See abstract, September 26, p. 1008.

5: 1443-1470 (Oct. 4) 1925

Treatment of Streptococcus and Staphylococcus Dermatoses. H Gougerot.—p. 1443.
*Value of Combined Treatment of Syphilis. Bernard.—p. 1450.
Etiology of Juxta-Articular Nodes. Dubois and Moncarey.—p. 1453.
Medical Treatment of Gastric Ulcer. G. Faroy and R. Worms.—p. 1456.
Falling and Blanching of the Hair from Emotional Stress. P. Sollier. —p. 1458.

The Efficiency of Treatment for Syphilis as Revealed by the Cerebrospinal Fluid.—Bernard examined the cerebrospinal fluid of 200 syphilitics who had responded negatively to the Wassermann tests of the blood for periods ranging from six months to several years. The cerebrospinal fluid was normal in eighty-two of the patients, and pathologic in the remaining 118. About 72 per cent. of the subjects with a normal cerebrospinal fluid had been treated with arsenicals and mercury; and only 17 per cent. with arsenicals alone. About 14 per cent. with a pathologic cerebrospinal fluid had been treated with arsenicals and mercury; 63 per cent. with arsenicals alone. The simultaneous use of both drugs seemed to be more effectual than alternating the mercury and arsenical series.

Gynécologie et Obstétrique, Paris

12: 97-196 (Aug.) 1925

Biologic Rôle of the Corpus Luteum and the Interstitial Gland of the Ovary. G. Schickelé.—p. 97.
*Obstetric Operations on the Pelvis. G. Rossier.—p. 167.
*Idem: Choice of Procedure. V. Le Lorier.—p. 185.

Indications for Operations to Enlarge the Pelvis.—Rossier reviews the indications for pubiotomy and symphyseotomy with reference to the obstetrical literature of the last fifty years. The main indications are contracted pelvis, excessive size of the fetal head, slow dilatation and malpresentation of the head In febrile cases of contracted pelvis, with a true conjugate a little less than 8 cm., pubiotomy should be preferred to cesarean section. With the subcutaneous technic for pubiotomy, fever is not a contraindication, neither is primiparity. The great advantage of these operations to enlarge the pelvis is that they allow carrying expectant treatment to the extremest limits.

Methods of Choice in Operations to Enlarge the Pelvis.—Le Lorier reiterates that the subcutaneous technic is free from the dangers of the open method. The results of subcutaneous pubiotomy seem to be the same as those of subcutaneous symphyseotomy. Intraspinal anesthesia is advisable when rapid delivery, spontaneous or instrumental, can be anticipated.

12: 197-276 (Sept.) 1925

*Broad Ligament Inclusions. Forgue and Crousse.—p. 197.

Broad Ligament Inclusions.—Forgue and Crousse's long and detailed study of this subject was one of the leading addresses at the recent gynecologic congress at Paris. They present a circumstantial review of the inclusions, mostly tumors, located in the broad ligament, their development, consequent changes in the ligament, and the surgical treatment.

Médecine, Paris

6: 829-904 (Aug.) 1925

Pediatrics in 1924. P. Lassablière.—p. 829.
Bladder Calculi in Children. P. Nobécourt.—p. 843.
*Treatment of Spasm of the Larynx. G. Mouriquand.—p. 847.
*Pyodermitis in Young Children. P. Chatin.—p. 854.
Examination of the Fundus of the Eye in Nervous Diseases of Children. L. Babonneix.—p. 856.
Asthma in Children. M. Péhu and F. Grivet.—p. 862.
Nephritis of Pneumococcus Origin. Leenhardt and Sentis.—p. 868.
Tubercle Bacilli in Feces of Tuberculous Children. C. Gardère.—p. 872.
Treatment of Tenia in a Wetnurse. P. Balard.—p. 874.
Seashore Treatment. G. Baudouin.—p. 878.
Vaccine and Serum in Treatment of Pneumonia. G. Blechmann.—p. 886
Light Deficiency as Factor in Infants' Diseases. Dorlencourt.—p. 891.
Pathogenesis of Jaundice in the New-Born. G. L. Hallez.—p. 896.

Etiology and Treatment of Spasm of the Larynx.—Mouriquand considers two types of spasm of the larynx, one from the spasmophilic diathesis, the other associated with enlargement of the thymus. Chvostek's sign appearing only in cases of spasmophilic origin, is important in differential diagnosis. This sign does not occur in infants under 6 months old. About 75 per cent. of all the children with spasm of the larynx presented signs of congenital syphilis; the frequent coincidence with rickets was also evident. Ultraviolet rays are the radical remedy for constitutional spasm of the larynx. Under other treatment, the six children died in the group of six cases with spasm of the glottis, while under ultraviolet rays, all the children recovered in a group of ten thus treated. The first exposure lasts one minute, and is gradually increased to five minutes by the fifth day. Then again a one minute exposure is given. A total of from twenty to thirty sittings, one daily, is required. Improvement is noted after five exposures; disappearance of Chvostek's sign and hypocalcemia after twenty. In spasm of the larynx with an enlarged thymus, the roentgen rays may be indicated. Treatment for syphilis should supplement both kinds of therapy. He reiterates that spasmophilia and rickets are deficiency diseases, the deficiency being in ultraviolet rays.

Ultraviolet Rays in Treatment of Pyodermitis in Young Children.—Chatin emphasizes that suppurating skin diseases may become epidemic in day nurseries and other places where young children are collected. His six years of experience showed stock staphylococcus vaccine to be ineffectual, but eight cases were cured with an autovaccine. Ultraviolet rays appeared to be the most beneficial treatment, inducing a rapid healing of the pyodermitis in twelve cases. The development of folliculitis into pyodermitis was checked under the rays in the already contaminated children. The rays were applied to the back of the child. They are given at one day intervals. The first exposure was for two minutes; the following were prolonged by two minutes, to a total of ten minutes at a sitting. Healing was usually obtained with five or six exposures; sometimes eight or ten were needed. The ultraviolet rays can be counted on to arrest an epidemic under such circumstances.

Paris Médical

57: 253-288 (Oct. 3) 1925

Neurology in 1925. A. Baudouin and H. Schaeffer.—p. 253.
Vertebral Arthritis or Tumor? J. A. Barré.—p. 266.
Crural Neuralgia and Radiculalgia. André-Thomas and Phelipeau. —p. 269.
Cervicobulbar Form of Epidemic Encephalitis. Schaeffer and Mathieu. —p. 277.
*Ionization Treatment of Spastic Hemiplegia. G. Bourguignon.—p. 280.

57: 289-304 (Oct. 10) 1925

Treatment and Prophylaxis of Diphtheria. P. Lereboullet.—p. 289.
Radium in Treatment of Cancer of the Tongue. C. Regaud.—p. 296.
Anaphylaxis and Flocculation. A. Lumière.—p. 299.

Transcerebral Ionization Treatment of Hemiplegic Contracture.—Bourguignon applies the positive electrode to the eye on the opposite side from the hemiplegia. The positive electrode is a cotton tampon that just fits into the entrance of the orbit, and is moistened with a 1 per cent. calcium chlorid solution. The negative electrode, moistened with plain water, is applied to the back of the neck. A 2 or 3 milliampere current is used at first, and the maximal strength of 4 or 5 by the third day. Six daily sittings, each lasting thirty minutes, are given the first week, and every second day the second, third and fourth weeks. This is followed by a three weeks' rest. The method was used in patients affected with hemiplegia for two to ten years and even longer. It resulted in a remarkable reduction of the rigidity, restoration of movements, improvement in speech, disappearance of spasms in jacksonian epilepsy, and also attenuation of spasmodic laughing and crying. Calcium ionization proved to be effectual only in spastic hemiplegia, but not in the flaccid type, evidently acting merely on the sclerotic process in the nerves. In syphilitic hemiplegia, calcium may be advantageously substituted by iodin. The ionization treatment appeared to be completely harmless. Faradization of antagonist muscles, with augmented chronaxia, may be a useful adjuvant in combating the contractures.

Presse Médicale, Paris

33: 1297-1312 (Sept. 30) 1925

*Leukemia from Radioactive Injury. P. Emile-Weil.—p. 1297.
*Etiology of Metrorrhagia. C. A. Castaño.—p. 1299.
Tuberculosis and Military Service. L. Jullien.—p. 1301.
High-Frequency Currents in Otorhinolaryngology. Leroux-Robert.—p. 1304.

Leukemia and Pernicious Anemia Consecutive to Occupational Injury from Radioactive Substances.—Emile-Weil reports a fatal case of myelogenous leukemia in a mechanic occupied for several years in the preparation of radioactive substances of the thorium family. Another mechanic, working on the same substances for several years, in the same factory, died from pernicious anemia. Both were robust and of healthy families. On microscopic examination, the lesions of the spleen, liver and bone marrow appeared to be identical with those in ordinary leukemia. It is assumed that irradiations as well as infections may induce changes in the cells in the hematopoietic organs. The author comments on the fact that the same radioactive substance seemed to be responsible for the two quite different blood diseases, probably on account of differing predisposition. He cites another case of fatal leukemia in a woman given a single intensive seven hour application of radiotherapy seven years before.

Rôle of Corpus Luteum in Uterine Hemorrhages.—Castaño's conclusions are based on his experiments on guinea-pigs. He asserts that the corpus luteum is responsible for the whole uterine menstrual cycle; it takes an important part in formation of the decidua and development of the ovum. Hormonal changes from the corpus luteum, and not inflammation of the endometrium, induce the reaction in the uterine mucosa entailing hemorrhages with fibroma and uterine disease.

Schweizerische medizinische Wochenschrift, Basel

55: 905-928 (Oct. 1) 1925

*Hallux Valgus. R. Scherb.—p. 905.
*Hearing Range. E. Schlittler.—p. 907.
*Serologic Reactions in Syphilis. C. Schuler.—p. 911.
Phantom for Obstetric Teaching. H. Brantmay.—p. 918.
Submental Abscess. F. Tramer.—p. 921.
Quacks and Official Medicine. L. Frank.—p. 921.

Hallux Valgus.—Observations of synergisms of muscles, made by Scherb with the aid of the moving sidewalk, revealed surprising individual differences. Abnormities of the action of the long muscles of the big toe may account for hallux valgus. He emphasizes that it is erroneous to endeavor to explain deformities only locally. The functional deviations due in the last instance to abnormal innervation may clear up many conditions. The treatment should be radical.

Hearing Range.—Schlittler tested the apparatus introduced by the state railroads in Switzerland. It was claimed that falling lead balls in the apparatus could be counted by the examined subject at the same distance as he hears the whispered voice. He found that many subjects hear the balls at a much greater distance. He finds that the technic of examination by the whispered voice is simple and more reliable. It should be taught properly in every medical school.

Serologic Reactions in Syphilis.—Schuler examined 5,000 serums with the Wassermann, Sachs-Georgi, Dold and Meinicke turbidity methods. The Wassermann reaction gave the largest number of positive results in syphilis, and the smallest number of false positive reactions. Of the others, the Sachs-Georgi was best, but gave nonspecific results in tuberculosis, arthritis and enteritis. The two other methods gave too many false positive results. They are of use for indicating the advisability of provocation treatment, with all the caution necessary.

Archivio Italiano di Chirurgia, Bologna

13: 1-782, 1925. Dedicated to A. Carle. Vol. II. Partial Index

Technic for Resection of Sternum. G. Parlavecchio.—p. 1.
*Amputation of Male Mamma for Tuberculous Process. A. Turco.—p. 18.
Malignant Thymoma in Girl Aged 9. G. Zanetti.—p. 25.
Treatment of Fistulas into the Bronchi. G. Anzilotti.—p. 34.
Special Plastic Operation After Removal of Two Large Hydatid Cysts in Left Lung. G. Tusini.—p. 58.
Review of 168 Laparotomies. E. Delfino.—p. 90.
*The Peritoneum and Local Immunity. S. Solieri.—p. 111.
Action on Tissues of Escaping Urine and Feces. L. Carmona.—p. 117.
Retroperitoneal Tumors. P. Nigrisoli.—p. 170.
Excretion by the Stomach of Injected Dyes. U. Faccini.—p. 202.
*Relations Between Gallbladder and Stomach. G. A. Pietri.—p. 212.
*Ulcer-Cancer of the Stomach. G. Massa.—p. 230.
*Postoperative Peptic Ulcers. R. Alessandri.—p. 257.
*Anastomoses Between Gallbladder and Digestive Tract. F. Marinelli.—p. 343.
*Acute Necrosis of the Pancreas. D. Calzavara.—p. 429.
Fatal Sepsis After Cauterization of Bladder Tumor with Trichloracetic Acid. F. De Gironcoli.—p. 539.
Hemorrhage from Rupture of Corpus Luteum in Nonpregnant Woman. F. Niosi.—p. 602.
*Cancer of Cervix of Myomatous Uterus. D. Giordano.—p. 652.
*Ankylosis of the Knee. G. Gatti.—p. 670.
Strip from Femur to Replace Upper Tibia. G. Serafini.—p. 683.
*Periarterial Sympathectomy for Mal Perforant. L. Durante.—p. 688.
Pes Cavus and Principles for Effectual Treatment. R. Galeazzi.—p. 697.
Treatment of Congenital Clubfoot. G. Scarlini.—p. 726.

Tuberculosis of Male Mamma.—Turco says that the case he reports, in which he amputated the mamma in the young man, is the first of the kind to be published in Italy. He has collected from the literature 200 instances of a tuberculous process in the female breast and eleven in the male.

The Peritoneum and Local Immunity.—Solieri argues that as the peritoneal serosa seems to surpass all other tissues in its power of resisting virulent germs, we are justified in regarding this as an acquired local immunity. He thinks this can be trusted, and drainage avoided, after the cause of the peritonitis has been removed and the serosa cleansed.

Relation Between Biliary Apparatus and Stomach Functioning.—Pietri's research on dogs gave constantly concordant results indicating a functional reflex arc between the gallbladder and the stomach. Partial or total loss of gallbladder functioning depresses gastric secretion, as also malfunction in the bile duct region. Operative measures are unable to restore normal secretory conditions to the stomach.

Gastric Ulcer-Cancer.—In Massa's two cases the women had had gastric disturbances for years. They noted that the pains were recurring oftener and more severe, with more frequent vomiting, and general depression, but the most striking sign of malignant degeneration of the indurated ulcer was the complete lack of any benefit from the usual measures which had previously proved useful.

Postoperative Peptic Ulcers.—Alessandri states that there was no evidence of an excessively acid or potent gastric juice in thirteen of his fourteen cases of peptic ulcer after gastro-enterostomy. The roentgen-ray findings were generally decisive.

Anastomosis Between Gallbladder and Gastro-Intestinal Tract.—Marinelli made a direct communication between the gallbladder and the stomach in twelve dogs and between the gallbladder and the duodenum or the colon, each, in five others. There was irritation and inflammation in every instance, wherever the gallbladder was sutured to the digestive tract, but this reaction was least with cholecystogastrostomy. It was so severe with anastomosis between the gallbladder and the colon that this technic should be discarded entirely.

Experimental Study of Acute Necrosis of the Pancreas.—Calzavara's research was on dogs and a few rabbits—twenty-one animals in all. He injected bile directly into the pancreas. A number of colored plates show the lesions induced. The animals could be saved by operative removal of the exudate, and drainage, provided this was done within the first six hours and if the amount of bile injected had not been too large. When the conditions allow a favorable outcome, the hyperglycemia begins to decline and disappears by the sixth day. When the hyperglycemia persisted, the animals all died. Hence, acute hyperglycemia in necrosis of the pancreas aids not only in differential diagnosis, but also in the prognosis, if it keeps high.

Cancer of Cervix of Myomatous, Assumed Pregnant Uterus.—The patient was supposed to be at the fifth month of her pregnancy but no fetus was found at the operation. This consisted in removal of the uterus and vaginal wall through a laparotomy. She is in good health to date five months later.

Correction of Ankylosis of the Knee.—After Gatti had mobilized the joint by cutting away adhesions and rounding the articulating surfaces, he interposed a free flap of fascia lata (on the head of the tibia). The boy, aged 9, had cut his knee in a fall six months before.

Periarterial Sympathectomy for Painful Trophic Lesions on the Feet.—Durante's contention that the decortication of the artery should be close to the peripheral lesion has already been mentioned in these columns. He here describes in detail his most convincing case: The mal perforant had proved rebellious to stretching of the sciatic nerve and to periarterial sympathectomy on the femur, while it healed promptly after periarterial sympathectomy on the posterior tibial.

Prensa Médica Argentina, Buenos Aires

12: 305-340 (Aug. 30) 1925

Hydatid Cyst in the Humerus. S. Marino and C. Fernicola.—p. 305.
*Trophic Disorders of the Nails. Castex and Camauer.—p. 315.
Treatment of Leprosy. J. L. Carrera.—p. 323.
Cancer in Stump of Uterus. J. C. Ahumada.—p. 324.
Endotoxins and Exogenous Toxins. L. La Porta.—p. 328.

Trophic Affections of the Nails.—Castex and Camauer devote this fourteenth article on the sympathetic nervous system to the influence of the nervous system on the development, growth and nutrition of the nails. In all their numerous patients with urticaria, vasomotor disturbance, vitiligo, etc., and other manifestations of a pathologic condition in the sympathetic system, the nails always presented abnormal findings, from simple parallel longitudinal or transverse lines to the severest forms of onychogryphosis. They insist on the necessity for studying the vegetative nervous balance in every case of disease of any kind accompanied with anomalies in the nails. The factor responsible for the loss of balance in the involuntary nervous system may be of toxic, infectious or traumatic origin, or from emotional stress. It may act directly on the sympathetic or by the mediation of the endocrine system or by regional or remote pathologic reflexes. They describe in detail three extreme cases and the therapeutic deductions therefrom.

12: 341-376 (Sept. 10) 1925

Incomplete Rupture of Crucial Ligaments. Valls and Verbrugge.—p. 341.
*Hyperkeratosis and Keratodermias. Castex and Camauer.—p. 350.
Case of Double Uterus. D. Iraeta and C. D. Medina.—p. 360.

Hyperkeratosis and Keratodermia.—This is the fifteenth article of the series, mentioned in the preceding abstract, which aims to reveal the underlying cause—the upset in the balance in the vegetative nervous system—in what seems a purely local affection. The horny changes in the skin in the two cases described were accompanied by signs of sympathetic disturbance. The endocrine system is generally more or less abnormal in such cases of loss of sympathetic balance. To reduce the hyperkeratosis, the causal factors must be determined and combated, in addition to local measures.

Semana Médica, Buenos Aires

2: 537-604 (Sept. 3) 1925

*Acquired Characters. J. Llambias and D. Brachetto-Brian.—p. 541.
Malignant Pustule. J. Roberto Paso.—p. 543.
An Epidemic of Pneumococcus Infection in the New-Born. J. P. Garrahan and S. Y. Bettinotti.—p. 546.
The Legg-Calvé Disease. A. Rodriguez Egaña.—p. 549.
*Acute Suppuration in the Thyroid. J. Giménez Zapiola and L. Sánchez Moreno.—p. 566.
The Fixation Abscess. M. Castiñeiras.—p. 569.
Spleen Irradiation for Asthma. M. Miranda Gallino and H. Malter Terrada.—p. 584.
Causes of Position Adopted for Limbs in Joint Processes. Valls.—p. 587.
Case of Discrete Generalized Tuberculosis. Goyena and Mackinlay.—p. 589.

Hereditary Transmission of Acquired Characters in the Peyton Rous Chicken Sarcoma.—Llambias and Brachetto-Brian confirm that passage of the Peyton Rous sarcoma through a fowl attenuates its virulence. When the malignancy is transmitted to the offspring, it is transmitted in this attenuated form, which they regard as the transmission of an acquired character. The sarcoma may lose all its virulence in this way. Conditions in this respect resemble those with cancer in man and animals—further proof, they say, of the biologic identity of these chicken sarcomas and human cancer.

Acute Suppurating Thyroiditis.—There had been no tendency to goiter apparent in the young woman before the acute onset of the suppuration in the thyroid. It induced severe symptoms from compression, but this subsided after the presumably solitary abscess in the thyroid had discharged its contents into the respiratory tract the tenth day. The vomica occurred spontaneously. The lesion flared up anew a month later, and was relieved again in the same way by a vomica. The roentgen rays showed the small communication into the trachea. Pneumococci and streptococci were found in the pus.

Archiv für klinische Chirurgie, Berlin

137: 1-198 (Sept. 19) 1925

*Impalement Injuries. O. W. Madelung.—p. 1.
*Nature of Suture in the Stomach. C. B. Strauch.—p. 81.
*Sympathectomy for Angina Pectoris. E. Hesse.—p. 117.
Operative Treatment of Clefts in Skull and Spine. Kosyrew.—p. 131.
Regeneration of Tendons Studied with Vital Staining. Imayoshi.—p. 143.
Treatment of Traumatic Abscess in Frontal Lobe. Winkelbauer and Brunner.—p. 160.
*Should We Operate for Gastroptosis? E. Liek.—p. 174.
Terminal Arteriovenous Aneurysms. Brsosowsky.—p. 183.
Aneurysm in Splenic Artery in Man of 50. Faehrmann and Ugrümow.—p. 193.
"Importance for Transplantation of Specific Organ Immunity." K. W. Ascher.—p. 198.

Impalement Injuries.—Madelung's first communication on impalement injuries of the rectum and anus was published in 1890, and he now has collected 276 such cases from the records, including fifty-five children and seven persons over 60. The gastro-intestinal tract had been injured in seventeen cases, and in five cases the impalement had been through the vagina, once by the horn of a steer, goring the woman from the rear. In twenty-nine cases the injury proved fatal in less than two days. Peritonitis became evident in eighty-four cases and proved fatal in fifty-two. All but fifteen recovered of the forty-four treated by a laparotomy. Even mere sitting down on a stake has been known to cause impalement injury opening the peritoneal cavity. The patient should be taken to a hospital at once, even after what seems to be a trivial impalement accident; one never knows how much damage has been done inside. He should be kept sitting up, to keep urine, feces and effusions in the lower part of the pelvis. Although tetanus after such a trauma is extremely rare, a prophylactic injection of the antiserum is advisable at once. Even the mere extraction of the stake may require a major operation, and this may be necessary to correct injury from ill advised attempts to remove the impaling article. Hemorrhage was slight and rare but he warns against rinsing out the rectum with hot or cold water, as has been recommended, and against suturing the tears until after the full extent of the injury has been determined. In Rosenberger's case, the stake had perforated the diaphragm, and the patient died the thirty-seventh day. The advantages of colostomy to supplement the laparotomy are borne out by practical experience. Madelung reviews all this material in detail, and the lessons therefrom, giving eight pages of bibliography.

The Suture in Stomach Operations.—Strauch concludes from his clinical and experimental study of this subject that the same principles apply here as in suturing the skin. All suturing on the stomach must be regarded as in an infected region, and catgut is the material to use. On the adhesion of the serosa depends the stanchness of the suture, and the sheets should be lapped as far as possible.

Surgical Treatment of Angina Pectoris.—Hesse operated on three women in the fifties and one man, all seeking relief for chronically recurring angina pectoris. In one case there were no further pains after the operation, and the radiation of the pains was arrested in all. In these and fifty-eight cases reported by others, no improvement was apparent in 6.8 per cent., but 70.5 per cent. were completely and 22.7 per cent. nearly completely cured. Nine of the patients died in a few hours or days after the operation (heart failure or pneumonia), and three died within six weeks without recurrence of the pains; death occurred suddenly with severe collapse of the heart. One of his own cases was in this

group, and is the only one of the kind with necropsy records. The anatomic and physiologic basis for the sympathectomy seems rational, and Jonnescu has two cases with complete cure for seven years and a year and a half to date.

Gastroptosis.—Liek questions whether a sagging stomach should be given operative correction, his impression being decidedly adverse to this. He says that what requires treatment is the whole constitution; the gastroptosis is only one manifestation of this. He has frequently encountered extreme gastroptosis in women quite unaware of their anomaly and free from all disturbance from it. The stomach may display atony on one occasion, and spastic contracture at another time. The common cause should be sought and corrected, not wasting efforts on the shape and size of the organ, which change from day to day. The benefits realized by surgical measures can be obtained with other and safer means, he reiterates.

Dermatologische Wochenschrift, Leipzig

81: 1495-1518 (Oct. 10) 1925

*Behavior of the Tissues in Artificial Phlebitic Thrombosis. G. Nobl and W. Löwenfeld.—p. 1495.
*The Coagulation Time in Dermatoses. J. von Deschwanden.—p. 1499.
Mechanism of Action of Sulphur. L. Görl and L. Voigt.—p. 1504.

The Structure of Artificial Phlebitic Thrombosis.—Nobl and Löwenfeld reproduce the photomicrograph of a small vein that had been injected six days before with a 50 per cent. solution of sugar. There was a relatively slight and tardy reaction on the part of the irritated vessel walls, but it had sufficed to induce a regular and firmly adherent thrombus production. The features of the consolidation, organization and obliteration processes demonstrated the practical impossibility of embolism. They add that the deaths that have been reported after injection of mercuric chlorid in treatment of varicose veins were undoubtedly due to mercurial poisoning or idiosyncrasy. With this artificial thrombus production with the hypertonic sugar solution a long stretch of the vessel is subjected to the same, regular, irritating influence, and the masses of thrombus that form cling evenly to the vessel wall throughout, guaranteeing against embolism. The conditions are entirely different from those with natural thrombosis.

The Blood Coagulation Time in Dermatoses.—The clotting time was found abnormally long in several skin diseases, especially in eczema. In five cases of chronic eczema recurring since childhood, the interval before coagulation ranged from fifty-three to sixty-six minutes. In seventeen normal persons, the range was from thirty-five to thirty-nine minutes.

Deutsche medizinische Wochenschrift, Berlin

51: 1641-1684 (Oct. 2) 1925

Inflammations of the Adnexa. C. J. Gauss.—p. 1641. C'td.
Hematuria. H. Kümmell.—p. 1643. C'cn.
Irradiation of Endocrine Glands in Cancer. Halberstaedter.—p. 1646.
*Herpes and Smallpox. E. Gildemeister and K. Herzberg.—p. 1647.
*Psychotherapy in Organic Nervous Diseases. M. Inglessis.—p. 1651.
Widal's Reaction in the First Week. F. Oster.—p. 1653.
*Prevention of Diphtheria. Denks.—p. 1655.
Toxin-Antitoxin Immunization. H. Kleinschmidt.—p. 1657.
*Tuberculin Reaction After Vaccination by Langer's Method. G. Fedders.—p. 1659.
The Art of Prescribing. II. K. Schübel.—p. 1661.
Leukocytic Index. A. Pines.—p. 1662.
Salabrose, a New Carbohydrate. M. Nothmann.—p. 1663.
Artificial Sunlight in Eye Diseases. F. Esser.—p. 1665.
Formula for Dilutions. W. Roloff.—p. 1665.
Cholecystography. K. Herman.—p. 1665.
A Vaginal Speculum. E. Guttmann.—p. 1666.
Sympathectomy in Otosclerosis. S. Rubaschow.—p. 1667.
Immune Diagnosis of Tuberculosis. F. Klopstock.—p. 1667. C'cn.
Changes in Accident Insurance. Martineck.—p. 1669.
Habitual Constipation. G. Lepehne.—p. 1680. C'tn.

Herpes and Smallpox.—Gildemeister and Herzberg produced relative immunity of the rabbit cornea against smallpox vaccine by inoculating it with the virus of febrile herpes. The contradictory results of other authors were due to the too large doses of vaccine they used. They discuss the question of herpes virus being a variant of smallpox.

Psychotherapy in Organic Nervous Diseases.—Inglessis deplores the psychotherapeutic nihilism in organic diseases of the nervous system. He reports a case of postencephalitic parkinsonism, the patient not able to write. Hypnosis, combined with suggestion from another patient, restored the faculty.

Prevention of Diphtheria.—Denks reports some untoward effects of a toxin-antitoxin vaccination. Some of the reactions might have been due to the fact that a Schick test had been made fifty days before the immunization. Tuberculous children are most liable to be hypersensitive.

Tuberculin Reaction After Vaccination with Langer's Method.—Fedders obtained positive tuberculin reactions in fifty out of sixty-two infants and children inoculated with Langer's vaccine. The pre-allergic period lasted usually two or three months.

Klinische Wochenschrift, Berlin

4: 1897-1944 (Oct. 1) 1925

Respiration and Circulation with Emphysema. R. Geigel.—p. 1897.
*Trypanocidal Substances of Serum. B. Leichtentritt.—p. 1899.
*The Pituitary and Diabetes Insipidus. P. Trendelenburg.—p. 1905.
*Hemitetany. Kehrer.—p. 1906.
*Action of Oxygen on Blood Pressure. H. Simon.—p. 1910.
*Hypoglycemia Without Insulin. E. Geiger and L. Szirtes.—p. 1912.
*Active Immunization Against Diphtheria. R. Kochmann.—p. 1914.
Etiology of Appendicitis. H. Ruge.—p. 1915.
*Peptidases in Infections of Paralytics. H. Pfeiffer et al.—p. 1916.
*Radiation from Man and Animals. H. Friedenthal.—p. 1917.
*Provocation of Seizure by Overventilation. F. Mainzer.—p. 1918.
Fat Embolism of Brain. A. Sarbó.—p. 1918.
Gynecologic Hemorrhages. A. Seitz.—p. 1920. C'td.
Summer Epidemics in Prussia. Lentz.—p. 1924.
Retention Stomach Tube. F. Boenheim.—p. 1942.
Exhaust Ventilation in Operating Room. Sturmann.—p. 1942.

Trypanocidal Substances of Serum.—Leichtentritt investigated with numerous collaborators the occurrence of the trypanocidal action in the serum of children. It was found in healthy infants beginning at least in the sixth to ninth week. It was absent in grave nutritional disturbances (especially from starch) of the avitaminotic type, such as keratomalacia and scurvy, in whooping cough, and in hemophilia. It was also absent in the seemingly healthy mothers of hemophiliac boys. Measles and thrombopenic purpura did not cause any diminution of the substance. Since Rosenthal has found that repeated injection of a protecting serum annihilates its action, it is probable that the serum acts only as a stimulant of the reticulo-endothelial system of the infected mouse. Blocking of this system—either by the large amounts of serum or by other substances (India ink)—exposes the mouse to infection in spite of the presence of the protecting serum. He has also found that certain germs grow poorly or develop pathologic forms in coagulated serum from patients in avitaminosis.

The Posterior Lobe of the Pituitary and Diabetes Insipidus.—Trendelenburg points out that one of the objections to the endocrine etiology of insipidus is the fact that large doses of the extracts are necessary to check the diuresis. If the usual claim, that 1 c.c. of the extract corresponds to 0.1 or 0.2 gm. of the posterior lobe, were true, the normal human pituitary posterior lobe—which weighs around 0.13 gm.—would have to empty its contents completely every day. He found, however, that the best commercial preparations corresponded only to 5-10 mg. of fresh posterior lobe. Therefore a daily secretion of 10-20 per cent. of the substance available would be sufficient. He found no data on the action of exactly titrated extracts in diabetes insipidus.

Hemitetany.—Kehrer analyzes his case and the literature. He concludes that a strictly unilateral tetany does not exist. Only the spontaneous spasms may in rare instances be limited to one side. This is always due to differences in the central nervous system—usually some lesion in the brain.

Action of Oxygen on Blood Pressure.—Simon confirms Loewy's experiments on the effect of oxygen. His patients inhaled daily for from three to eight minutes (sometimes several times daily) about 6 liters of oxygen per minute. In six of ten patients with nephritic or arteriosclerotic hypertension, a permanent lowering of the blood pressure was realized. Normal subjects were not influenced.

Hypoglycemia Without Insulin. — Geiger and Szirtes obtained extreme hypoglycemia by injecting 0.5-1 mg. of atropin per kilogram in rabbits after splanchnicotomy. All of the animals had spasms, but only a few hours after the blood sugar sank to 0.03-0.01 per cent. Injection of glucose or epinephrin had favorable transitory effects, the latter at times in spite of the further lowering of the blood sugar level.

Active Immunization Against Diphtheria. — Kochmann observed three cases of comparatively grave diphtheria in Schick negative infants who were being immunized with toxin-antitoxin. He warns against the danger of the negative phase, especially in Schick negative subjects.

Peptidases in Infections of Paralytics.—Pfeiffer, Standenath and Weeber found an increase of the glycyltryptophan splitting peptidase in the serum during malaria attacks, erysipelas and grave febrile tuberculosis in patients with general paralysis. The amount of the ferment in the urine was diminished during the height of the fever.

Radiation from Man and Animals.—Friedenthal has devised an apparatus to measure the radiation from the body. Emotions have a great influence. The apparatus is sufficiently sensitive to indicate differences in the radiation from the pupil in looking calmly or staring.

Provocation of Seizure by Overventilation.—Mainzer was able to induce a seizure by deep breathing only in two of fourteen patients with epilepsy or hysteria. The experiment was constantly successful in a patient with traumatic epilepsy. The concentration of chlorin in the blood plasma increased 4 per cent. during the hyperpnea. An intravenous injection of a 10 per cent. solution of sodium chlorid also provoked the seizure, as well as an equimolecular solution of sodium acetate, but not of glucose. He believes that an osmotic irritation of the central nervous system and perhaps a specific action of the chlorin ion are responsible.

Wiener Archiv für innere Medizin, Vienna

11: 201-424 (Sept. 25) 1925

*Diabetes Insipidus and Polydipsia. R. Bauer.—p. 201.
*Acute Leukemia and Sepsis. A. Decastello.—p. 217.
Roentgen Diagnosis of Pulmonary Tumors. F. Eisler.—p. 245.
*Chlorin Metabolism and Gastric Secretion. G. Holler.—p. 251.
*Action of Glucose and Insulin on Muscles. Kollert and John.—p. 267.
Tuberculosis and Efficiency. E. Kugler.—p. 281.
*Spleen and Iron Metabolism. E. Lauda.—p. 293.
Inflammation of Meckel's Diverticulum. L. Petschacher.—p. 311.
*Dynamic Action of Carbohydrates. H. Pollitzer and E. Stolz.—p. 319.
Pulmonary Atherosclerosis. A. Posselt.—p. 357.
*Iso-Agglutinins. W. Starlinger and U. Strasser.—p. 399.
Acute Nephritis. E. Stolz.—p. 405.
The Exudative Diathesis and the Vegetative System. H. Wittgenstein.—p. 417.

Diabetes Insipidus and Polydipsia.—Bauer's patient voided from 10 to 20 liters of urine daily. Pituitary extracts lowered the output, but physiologic salt solution substituted without the patient's knowledge had the same beneficial effect. He discusses all the differential symptoms known from the idiopathic diabetes insipidus and polydipsia, and concludes that none of them are decisive, except the result of suggestive treatment.

Acute Leukemia and Sepsis.—Decastello concludes from his own cases and the literature that acute leukemia must not be identified with sepsis, although it follows sometimes septic infections. He emphasizes Petrén-Odin's case, in which a long remission was obtained by injections of arsphenamin (7.2 gm. in 0.6 gm. doses within a month).

Chlorin Metabolism in Disturbances of Gastric Secretion.—Holler confirms in a general way Gundermann's findings. Yet only those cases of duodenal ulcers show an increased diuresis (in the Volhard test) in which there is hyperacidity. With low chlorin content in the stomach, the diuresis is smaller, but the elimination of chlorids is high (ulcers of the stomach). Chronic appendicitis causes frequently gastric hypersecretion and corresponding changes of diuresis. Cancer of the stomach has usually a low elimination of water and of salt, except with extremely high chlorin concentration in the stomach.

Action of Glucose and Insulin on Muscles.—Kollert and John's investigations were made on patients with idiomuscular irritability. This is the formation of a local contraction on mechanical irritation (percussion). The contraction lasts for a few seconds and occurs in fatigue and cachexia. Intravenous infusion of 35 c.c. of a 40 per cent. solution of glucose improved the condition. Addition of insulin enhanced this action, although insulin alone had no effect. The muscles of cachectic carcinomatous patients were most difficult to influence—perhaps because the glucose was absorbed by the tumor. They also think that idiomuscular excitability indicates a disturbance of the carbohydrate metabolism of the muscles.

Spleen and Iron Metabolism.—Lauda found no siderosis in otherwise healthy rats after splenectomy. The contradictory results of other authors are explained by the occurrence of an infectious hemolytic anemia in these animals.

Specific Dynamic Action of Carbohydrates.—Pollitzer and Stolz observed a marked irregularity of the oxygen consumption after the intake of carbohydrates. Bread and glucose acted differently even in the same individual. They explain this by the close connection with the water-regulatory function of the liver. While the majority of subjects did not show any changes of the oxygen intake after drinking water, the metabolism in patients with jaundice decreased. They agree with Gigon that there is no specific dynamic action of the food. They find that the food intake starts the work of the complicated mechanism of maintaining the constancy of basal metabolism, of temperature and of turgor (water metabolism). "We are testing by the specific dynamic action the functional attitude of these systems and the form in which they react."

Iso-Agglutinins in Blood Plasma and Serum.—Starlinger and Strasser found that native plasma from subjects of Group II frequently agglutinated corpuscles of Group III less strongly than the serum from the same subject, while it was the reverse with Group III. They also mention that some of the Group II plasmas agglutinated corpuscles from Groups II and III.

Wiener klinische Wochenschrift, Vienna

38: 1075-1098 (Oct. 1) 1925

*Oncogenic Constipation. H. Pollitzer.—p. 1075.
Perirectal Gas Phlegmon. H. Kunz.—p. 1082.
*Cataphoresis in Tuberculosis of Bones. T. B. Weiss.—p. 1083.
Rectal Administration of Pituitary Extracts. A. Weil.—p. 1085.
*Medical Thinking. A. Greil.—p. 1086.
Fight Against Typhoid. S. Peller.—p. 1089.
Insulin Treatment. W. Falta. Supplement.—pp. 1-16.

Oncogenic Constipation.—Pollitzer deals with the constipation in fat, torpid women, which he attributes to disturbances of the turgor (Greek, *onkodes*). These patients have a low basal metabolism. In one group the specific dynamic action of the food is high, in the other low. The latter is increased by intramuscular injections of 10 c.c. of physiologic solution of sodium chlorid saturated with hydrogen sulphid. Drinking daily half a glass of a 5 per cent. dilution of such a solution, or sulphur baths, may also relieve the constipation. Thyroid treatment which helps in such cases, probably acts in a similar way on the turgor.

Electrotherapy.—Weiss used successfully cataphoresis of colloidal silver for impregnation of bones from cadavers. The results were sufficiently encouraging for therapeutic experiments in tuberculosis of the bones. The first impression was very good, but he thinks that it is necessary to wait longer with the publication of clinical results.

Medical Thinking.—Greil emphasizes the importance of epigenetic changes. The "wonder world" of teratomas with all its intermediary changes toward univitelline quadruplets is determined in the second week of pregnancy—not at the moment of fusion of the spermatozoon with the ovum. He thinks that the terrorism of the chromosomes has injured clinical biology and the development of medical science more than the terrorism of a one-sided bacterial etiology. The highest triumph of medicine would be to learn enough about

pregnancy and the development of the fetus to be able to direct this epigenetic series of reactions, helping, and preventing constitutional anomalies. This "descent to the mothers" is inhibited, he says, by the reign of theories on determinants, gens and germ plasm, which physicians *credunt quia absurdum*. There is no difference in physical chemistry between the determination and realization factors. By this differentiation, Roux produced an abyss between inorganic and living matter which would condemn the physician forever to the rôle of a half ignorant healer-artist. He believes that the theories that the fate of the individual is fixed at the time of fecundation, the theory of gen coupling, lethal factors, etc., are only writing-desk fictions. The sexes have a different significance in heredity, the yolk and middle part of the spermatozoon are important factors—not only the chromosomes. He wants medicine—a science of action—to get rid of the convenient mistakes of the reigning theory of heredity. It is innocuous in zoologists and botanists, but they will, he believes, come in time to learn from the physician, who is conscious of his responsibility to suffering and upward striving humanity.

Zeitschrift für Kinderheilkunde, Berlin

40: 1-176 (Sept. 28) 1925

*Influence of Unphysiologic Feeding. P. Junkersdorf and P. Jonen.—p. 1.
*Sedimentation Test in Scarlet Fever. L. Büchler.—p. 18.
*Proportional Fuel Value of Foods. C. Pirquet and R. Wagner.—p. 26.
*Gastric Acidity in Infants. F. Demuth.—p. 46.
*Syphilis from Wetnurse. H. Wimberger.—p. 68.
Idiopathic Osteopsathyrosis. H. Rau.—p. 77.
*Treatment of Pylorospasm. H. Herz.—p. 83.
*Gonorrheal Arthritis in Infants. B. Hellmann.—p. 92.
*Dick Test and Scarlet Fever. E. Nobel and H. Orel.—p. 96.
*Whooping Cough. S. Meyer and E. Burghard.—p. 103.
*Massage in Rickets. H. Wimberger.—p. 119.
Acute Psychoneuroses in Children. J. K. Friedjung.—p. 126.
Albumin Milk Plus Browned Butter. H. Pogorschelsky.—p. 133.
Etiology of Nevus. L. Leven.—p. 147.
*Idiopathic Polycythemia. O. Herz.—p. 151.
Necessity for Training of Children. F. Göppert.—p. 157.
*"Acute Cerebral Tremor." P. G. Böttcher.—p. 170.
*Serum Sickness After Treatment of Diphtheria. E. Bienenstein.—p. 175.

Influence on Growth of Unphysiologic Food.—Three litters of puppies were fed with a flour gruel such as is used in infant feeding, rich in carbohydrates but without fat. The effect on the development was of the vitamin deficiency type, and it was more serious the younger the animal at the time this feeding was begun. The deleterious influence was most pronounced when the mother animals had been undernourished during the gestation. In addition to the abnormal conditions in regard to growth and development, the puppies showed a peculiar disappearance of the pigment in the ball of the paws, and an abnormal chemical composition of the entire organism, especially of the liver. The entire findings suggest that the action of the vitamins is analogous to catalysis. They throw light on deficiency disturbances and the *Mehlnährschäden* of the pediatricians. The research was aided by a grant from the Rockefeller Foundation.

Import of the Sedimentation Test in Acute Infectious Diseases in Children.—This instalment is devoted to scarlet fever. Büchler noted that the twenty-fifth day was the earliest date in thirty-five cases of scarlet fever at which the sedimentation test gave an approximately normal response. The chart of the test findings shows a gradual slanting rise on a straight line to the twenty-fifth day and then a horizontal line. If the line of the curve drops down, some complication is developing.

Fuel Value of Elements of the Food.—Pirquet and Wagner tabulate under nineteen headings the findings in 386 specimens of animal foods and 542 specimens of foods of vegetable origin. The aim is to estimate the proportional fuel value in each of the protein, fat and carbohydrate content. Each article of food in the diet for diabetics can now be ordered in portions which correspond to the potential energy of the food materials instead of merely their weight. They use nems for their calculations.

Motor Functioning and Acidity of the Stomach in Infants.—Demuth gives over twenty pages of further data to supplement his previous research on this subject. Among the facts emphasized is that the presence in the stomach of bacilli of the colon group is not necessarily pathologic. With acidity less than a p_H of 4.5, these bacilli were found in the stomach in 57 per cent. of the sick infants; in 65 per cent. of the dyspeptic, and in 69 per cent. of the healthy infants.

Infection from Syphilitic Wetnurse.—The child was not thriving on artificial food, and a wetnurse was engaged when the child was nearly 3 months old. She had been obtained through the regular wetnurse institute, but had a "fever blister" on the lip which healed promptly, but a sore developed on the cheek, and the Wassermann test was then positive, and was positive in the infant's blood three months after the wetnurse had been engaged. The case is notable in that the infant developed an arsphenamin dermatitis. Necropsy showed grave syphilitic injury of the liver.

Nonsurgical Treatment of Pylorospasm.—Herz has had eight female infants in his latest series of fifty-two cases of pylorospasm under the age of 18 weeks. He treats it exclusively internally, ten or twelve small feedings of human milk daily, by bottle, spoonful or tube in the nose. The tube in the nose causes least irritation of the nervous stomach centers, and is borne best. In twenty-six cases a cure was realized without drugs. In others, atropin, cocain or papaverin was used besides. The attention the infant gets from the nurse is a potent factor in the outcome; one infant may do better when lying prone after feeding, another when reclining with a sandbag on the abdomen. None of the fifty-two died from the effects of the pylorospasm, and forty-five were partially or completely cured.

Gonococcus Arthritis in Infants.—Hellmann relates that infection had been intra-uterine in one of the two cases he describes. No entering point for the gonococci could be discovered.

The Dick Test in Scarlet Fever.—Nobel and Orel obtained a positive response in only eight of sixty-nine children known positively to have had scarlet fever; in four of twenty-seven supposed to have had the disease, and in 27.8 per cent. of 270 without a history of scarlet fever. Time will show whether any of the negative children develop scarlet fever later; on this depends the usefulness of the test.

Whooping Cough.—This Düsseldorf clinic analysis of 442 cases in infants less than a year old, 423 in older infants, and 199 in children over 3, emphasizes the lack of the whoop in the younger infants. By waiting for the whoop, and not isolating in time, an epidemic may become installed. The infants are extremely restless, and their crying is with rapid breathing, interrupted by frequent coughing. They scratch their faces, bump their heads against the side of the crib, and throw their arms about. Roentgenoscopy may reveal an emphysema partly covering the heart. Attacks of sneezing may initiate or substitute whooping cough paroxysms. In one child, spasms of yawning initiated the paroxysm of coughing. Whooping cough is a serious disease in infants; it may induce fatal closure of the glottis or fatal convulsions from other cause or from the whooping cough paroxysms; in the latter, possibly, by necrosis of ganglion cells. Complications on the part of the lungs are common in infants; the infant may survive a first attack of complicating pneumonia and succumb to a second. Bacteremia was noted in nine cases after whooping cough pneumonia with fatal localizations. No drugs displayed any efficacy in infants, but vaccine therapy seemed to aid in aborting the disease. It had no appreciable effect on the established disease. The main reliance is on "open air" treatment and breast milk. Reduction of intake of fluids helps to reduce secretion; it may be well to give the food in a thick gruel form. The thick food feeding (four a day) has the further advantage that the stomach contracts to a smaller size and does not push up the diaphragm, relieving the respiratory organs to that extent. There is less tendency to vomit with the thick food. Stretching the neck by lifting the chin mechanically shortens the coughing spasm, and venesection in whooping cough pneumonia often tides the infant past the danger point. Of the total 1,064, 38 per cent. died of those under 3; 10.4 per cent. of the 2 to 3 age, and 3 per cent. of the 199 over 3.

Mechanotherapy for Rickets in Infants.—Wimberger is inclined to think that massage of the legs twice a day helped in the treatment of rickets in infants taking cod liver oil, but not in the others.

Familial Polycythemia.—Herz describes four families with a total of thirteen members presenting polycythemia of moderate degree without subjective symptoms. The spleen was not enlarged and the blood pressure was not always high. The erythrocyte count ranged from 5,300,000 to 8,200,000.

"Acute Cerebral Tremor."—A boy, aged 5, was brought to the hospital with the diagnosis of tuberculous meningitis, thirteen days after a fall injuring the back of the head. The fever, diarrhea, somnolency, spasms, contractures and athetotic movements with twisting of the head and tremor continued for some days. The fever subsided the eleventh day, the stupor the next day, and the other symptoms soon after, with complete recovery. Treatment had been merely symptomatic, long tepid baths, and chloral by the rectum the most restless nights. Böttcher regards the case as an instance of a new infectious disease in which the brain is transiently affected. Like the meningism of acute infectious diseases, there was a kind of encephalism.

Serum Sickness After Diphtheria Antitoxin Treatment.—Bienenstein relates that 17.2 per cent. of 235 children developed serum sickness (Vienna).

Zentralblatt für Chirurgie, Leipzig

52: 2225-2288 (Oct. 3) 1925

*Treatment of Gastroptosis. B. Martin.—p. 2226.
*Internal Drainage of Hydrocephalus. Heile.—p. 2229.
"Technic for Bone Suture." M. Kirschner.—p. 2236.
*Cyst and Cavity Formation. M. Gara.—p. 2238.
Vein Implant to Bridge Gap in Artery. Weglowski.—p. 2241.
*Treatment of Varicocele. C. Prima.—p. 2244.
*Treatment of Gastroptosis. W. R. Braizew.—p. 2245.
*Treatment of Mal Perforant. Bertone.—p. 2248.

Operative Correction of Gastroptosis.—Martin argues that the sagging of the stomach is due to a substandard condition of the cardiac portion. He explains the separate origin of this part of the stomach, and how the lack of elasticity entails the ptosis. His remedy is resection of the cardiac portion, and he describes four cases in which he applied this with excellent results to date, from eight to twelve months since the operation.

Anastomosis Between the Ureter and Spinal Dura to Drain Congenital Hydrocephalus.—Heile has applied this treatment successfully in an infant with progressive hydrocephalus and convulsions. The ureter was cut to include the funnel at the junction with the kidney pelvis. It was then drawn over to the spine, which it reached without traction. Before incising the dura, the retroperitoneal incision was sutured. The sacrifice of a healthy kidney is the drawback of this method. The intervention was borne surprisingly well by the young infant. The child has developed apparently normally during the five months since, and has had no return of the previous spasms. Heile applied this technic further in a case of brain tumor with the spinal fluid under high tension, but the condition was too grave for more than temporary relief and the adult patient died the next day.

Cysts as Regeneration Process.—Gara has induced the formation of cysts in subcutaneous tissue and muscles which seemed to be identical with the congenital and acquired. He is convinced that every cyst must be regarded as the result of an effort at regeneration. Hence the only treatment for it is the complete extirpation of the whole process, with all its walls. Conditions are then provided for healing by some other mechanism than "cyst healing."

Treatment of Varicocele.—Prima insists that varicocele is merely one manifestation of a general substandard condition. The indications are to tone up the whole system. When this is accomplished, the varicocele will spontaneously subside. He protests against local operative measures.

Surgical Treatment of Gastroptosis.—Braizew presents evidence to show that the cause for the sagging of the stomach is generally traction from the sagging of the transverse colon. He corrects this by suturing the mesentery of the transverse colon to the anterior abdominal wall, on a level with the tenth rib. As soon as the drag from the mesocolon is corrected in this way, the stomach regains its normal elasticity and there is no further gastroptosis. He has operated in this way in three cases, with excellent results.

Stretching the Nerve Trunk in Treatment of Mal Perforant.—Bertone has found this constantly effectual in treatment of mal perforant, as applied in about 100 cases at the Venice surgical clinic. Of course the healing left a cavity defect, but this occurs also with excision. The stretching of the sciatic nerve is a simpler procedure than peripheral sympathectomy, while the results seem to be more dependable.

Časopis lékařů českých, Prague

64: 1393-1428 (Sept. 26) 1925

Remnants of Cloaca and Wolffian Duct Near the Bladder. G. Müller.—p. 1393.
*Friedreich's Ataxia. V. Jedlička and K. Henner.—p. 1396.
*Duodenal Stenosis from Adhesions. V. Novák.—p. 1403.
*Pirquet Test in Infants. F. Skalník.—p. 1408. C'cn.
Actinomycosis of the Genitals. F. Horálek.—p. 1411.
*Exophthalmic Goiter. E. Kliment.—p. 1417.

Friedreich's Ataxia.—Jedlička and Henner describe two cases of cerebellar ataxia. The first had spastic flexion paraplegia, the other a loss of vestibular reactions with the cochlear apparatus intact. Photomicrograms of sections from the spinal cord of the first case are added.

Duodenal Stenosis from Adhesions.—Novák discusses his twenty-four cases of stenosis of the duodenum due to adhesions; all of them were confirmed or diagnosed by the laparotomy. The symptoms of obstruction usually arise only with gastroptosis. Roentgen rays are essential for the diagnosis.

Pirquet Test in Infants.—Skalník's twelve cases demonstrate that a positive Pirquet test proves, even in infants, only a tuberculous infection—not necessarily the disease. The negative response is valuable only if the possibility of an ante-allergic or negatively allergic state or deterioration of the tuberculin is excluded.

Exophthalmic Goiter.—Kliment reports favorably on the results of treatment of exophthalmic goiter with ergotamin tartrate.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

2: 1311-1406 (Sept. 19) 1925

*Necrosis of Fat in the New-Born. Carol and van der Zande.—p. 1317.
*Roentgenography of Periesophagitis. Huizinga and Keijser.—p. 1328.
*Cancer of the Skin. Wassink and Wassink-van Raamsdonk.—p. 1333.
Minor Technical Point in Extension for Fracture. F. Geelen.—p. 1341.
Korsakoff's Syndrome in Woman with Pancreas Cyst. Bolten.—p. 1342.

Subcutaneous Necrosis of Fat Tissue.—The newly born child developed adiponecrosis subcutanea neonatorum, and died the thirty-ninth day. This affection seems to be a distinct morbid entity, with a special clinical and histologic picture that has nothing to do with sclerodermia, although such cases have probably been classed with the latter or labeled sclerema adiposum. The necrosis and splitting of the fat was accompanied by an inflammatory reaction and resorption. The child had been apparently healthy for three weeks after spontaneous delivery. The location of the patches suggested trauma, possibly during the efforts to resuscitate the child, born in deep asphyxia.

Roentgen Rays in Periesophagitis.—Huizinga and Keijser call attention to the importance of Minnigerode's discovery of a light strip in the roentgenogram corresponding to air that had escaped through a perforation in the esophagus, or gas generated in a suppurating process. They describe four cases, one with spontaneous subsidence of the disturbances after extraction of the swallowed bone. After the swallowing of a foreign body, repeated roentgenoscopy will reveal the first onset of escape of air through perforation of the esophagus wall, and allow intervention in time to ward off serious trouble.

Radiotherapy of Cancer of the Skin.—The cancer research institute at Amsterdam treated 160 cases of superficial cancers 1915-1921, all with radium, curetting the extensive ones to

allow closer application of the radium. The histologic structure did not seem to influence the results. There was recurrence in only twenty-five, and the recurrence promptly subsided under renewed application of radium. Every case was cured that did not have metastases when first seen, or special circumstances preventing contact with the radium.

2: 1407-1514 (Sept. 26) 1925

Medical Education in Europe (Flexner). G. van Rijnberk.—p. 1407. C'tn.
*Pulmonary Embolism. K. de Snoo.—p. 1411.
*Malaria in Palestine. Swellengrebel.—p. 1422.
Adipositas Dolorosa in Mother and Three Daughters. Bolten.—p. 1433.
Vaccine Therapy in Whooping Cough. N. A. Scheers.—p. 1437.
Hydatid Cyst in Young Woman's Lung. A. de Jongh.—p. 1438.

Fatal Pulmonary Embolism.—De Snoo relates that two parturients died recently in his service on the same day from pulmonary embolism. He thinks this is more than a casual coincidence, having noticed the same accumulation of cases on other occasions, suggesting that the bacteria were of a special thrombosis-inducing type. There have been twelve cases of fatal embolism of the lung since 1907, in a total of 10,000 deliveries. The embolus came from the pelvic veins in all but one of the cases. Seven of the women died within a few minutes; two in half an hour, one in thirteen hours, and in the latest case two days had elapsed from the first symptoms of embolism. No instance was known of embolism in the spontaneously delivered women, not even with placenta praevia, eclampsia, syphilis, anemia, heart disease, or other complication. The difference is striking between the 8,200 spontaneous deliveries without a single instance of embolism and the eleven fatal embolism cases in 1,845 artificial deliveries. He insists that every woman with thrombosis should be isolated as infectious. He refuses all except emergency operations during thrombosis epidemics. With severe infection, there is less danger of embolism, as the thrombi stick faster to the vessel wall. In one of his cases a loose thrombus, 40 cm. long, had developed in the femoral vein, which raises the query why embolism is not more common. Possibly the thrombosis-cocci increase the coagulability of the blood, and it may yet be possible to combat this with extract of leeches or other means without danger of after-hemorrhage.

The Fight Against Malaria in Palestine.—The spleen malaria index has fallen from 59 per cent. of 616 children examined in 1912 to zero in 1924 among 829 children. Swellengrebel remarks that the lack of rainfall and other conditions in Palestine facilitate the extermination of malaria.

Acta Chirurgica Scandinavica, Stockholm

59: 287-437 (Oct. 1) 1925

*Rectal Prolapse in Children. G. Petrén.—p. 287.
Conditions as to Asepsis in Lund Surgical Clinic. Ivarsson.—p. 299.
*Splenectomy in So-Called Banti Disease. R. Brandberg.—p. 335.
*Traumatic Detachment of the Gallbladder. L. Andersson.—p. 369.
*Contusion Injuries of Biliary Apparatus. Idem.—p. 380.
Heminephrectomy for Hydronephrosis in Horseshoe Kidney. Hellsten.—p. 415.
*Human Horns. R. Olinder.—p. 427.

Ultimate Outcome of Rectopexy in Children.—Petrén endorses the simplicity, ease and excellent outcome of Ekehorn's method of treating prolapse of the rectum or anus by passing a stout silk thread through the posterior wall of the rectum and tying it over the lower part of the sacrum. The thread is removed after two weeks. Recent reexamination of twenty-six children that had been treated by this means at Lund between 1910 and 1923 showed that it had been permanently effectual in all. The ages of the children ranged from 14 months to 7 years, with the exception of one child of 12. In this latter case the reaction, both general and local, was more severe than in the others, but in six cases the temperature rose to about 39 and in thirteen to nearly 39 C. The stay in the hospital averaged eighteen and a half days. The desired result from the rectopexy was attained constantly, without exception, in the known fifty-eight cases to date in which this technic had been applied. Ekehorn's original description of it is reproduced. The article is in German.

Splenectomy in Banti's Disease.—Brandberg regards splenectomy as indicated in every type of cirrhosis of the liver with enlargement of the spleen, but he has had no experience with actual Banti's disease. In four cases of cirrhosis of the liver with enlargement of the spleen, splenectomy had a beneficial effect, arresting the process in the liver, although a cure is out of the question. One of the four patients died from the progress of the disease, five years after the splenectomy. The others are still in comparative health from nine months to three years since. In two other cases, one patient died from postoperative complications and the other survived only two years. No benefit from the operation was apparent in this case. The microscopic findings in the spleen in splenomegalous cirrhosis seem to be identical with those in the spleen from progressive thrombosis of the splenic and portal veins. The disturbances in both are therefore probably of the same nature, the result of extreme venous stasis. In a group of three other cases, the spleen findings were quite different; there was hyperplasia of cells and lack of any tendency to fibro-adenia. The spleen in these three women was larger than in the liver cirrhosis cases and all were benefited by the splenectomy. There was a possible suggestion of lymphatic aleukemia in one case and of lymphogranulomatosis in another. The latter patient died from pneumonia six months later. The third patient was well for a year after the splenectomy, but then chronic nephritis developed. This thirty-four page article is in English, and the ten splenectomy cases are described in detail.

Traumatic Separation of the Gallbladder.—Andersson's patient, a boy, aged 4, recovered after the gallbladder—partially separated by a fall from a wagon—had been replaced. The bleeding from the bed of the gallbladder was arrested with a couple of catgut sutures, and tampons were packed in the angle between the gallbladder and the liver. Eleven somewhat similar cases are summarized from the records. The symptoms are similar to those from contusion in general. The gallbladder itself was torn only in one instance, and there was not much hemorrhage in several.

Contusion of Biliary Apparatus.—Andersson's study of this subject is based on twenty-four cases of subcutaneous rupture of the liver and two of rupture of a bile duct.

Human Horns.—The horn in the case described was on the abdomen, just below the umbilicus. It was 34 cm. long and measured 14 cm. around the base. The patient was a woman of 55.

Ugeskrift for Læger, Copenhagen

87: 815-840 (Sept. 17) 1925

*Deep Action of Silver Salts. H. Haxthausen.—p. 815.
*Activation of Peroneus Muscle. A. Berntsen.—p. 821.
*Extraction of Embolus in Pulmonary Artery. Biilmann.—p. 823.
Right Cerebral Paresis of Neurosis Type. C. Gram.—p. 827.
Ambidexterity. C. Gram.—p. 828.

Deep Action of Silver Nitrate.—Haxthausen concludes from his extensive experience that there is no experimental or clinical basis for the assumption that organic preparations of silver have any greater efficacy than silver nitrate in injection treatment of gonorrhea. The latter diffuses to a greater depth in the tissues than the others. Comparative tests in fifty cases of acute uncomplicated gonorrhea showed invariably a better effect from silver nitrate.

Tendon Transplantation to Restore Function to the Peroneus Muscle.—Berntsen's illustrations show how he lengthens the Achilles tendon by slitting it lengthwise, bayonet fashion, and then draws it around behind the peroneus muscle to which it is sutured. By this means the flaccid peroneus is activated by traction from above and below and on both sides. In twenty-six of thirty-eight cases the outcome was excellent. The failures were all due to the fact that the Achilles tendon was not so capable as had been assumed.

Embolus in Pulmonary Artery.—Biilmann comments on the fact that all died soon after the embolectomy in the nine cases on record treated by the Trendelenburg technic; only one survived to the sixth day. He has worked out on the cadaver a method which he thinks would be more effectual. It includes slitting the sternum lengthwise and aspirating the embolus through the pericardium. He has been able to complete the whole procedure on the cadaver in a minute and a half.